

# A Life-Course Developmental Analysis of the Cycle of Violence

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Received: 18 May 2017 / Revised: 5 October 2017 / Accepted: 29 November 2017 /

Published online: 14 December 2017

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## Abstract

**Purpose** Research on the cycle of violence has consistently indicated a link between maltreatment and subsequent offending. Less attention has been given to whether the timing or type of maltreatment affects later delinquent behavior. This study investigates these issues. The timing of maltreatment is coded as occurring during childhood only (i.e., ages 0–11), adolescence only (i.e., ages 12–18), and persistent maltreatment (experienced in both childhood and adolescence). Analyses also examine if the impact on self-reported delinquency and arrest at age 18 varies according to the type of maltreatment (neglect, physical abuse, sexual abuse, and emotional abuse) based on official records from child protective services agencies.

**Methods** This study relied on secondary analysis of prospective data from 890 to 898 participants in the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN).

**Results** Results from logit and negative binomial regression models indicate statistically significant relationships between adolescent only and persistent maltreatment and delinquency and arrest, and these relationships varied according to the type of maltreatment assessed. No significant relationships were found between any type of maltreatment experienced in childhood only and any of the outcomes.

**Conclusion** These findings suggest that adolescent maltreatment is more strongly related to delinquent behavior than childhood only maltreatment, which means that some justice system-involved youth will likely be coping with recent exposure to trauma. Services should be integrated into juvenile justice diversion and treatment programs to address these traumatic experiences. The results also suggest that future research continue to assess how the cycle of violence may vary according to the timing and type of maltreatment experienced by victims.

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**Keywords** Delinquency · Cycle of violence · Sexual abuse · Physical abuse · Life-course criminology

The cycle of violence theory posits that childhood maltreatment increases the likelihood of offending [76].<sup>1</sup> Support for this relationship has been demonstrated in dozens of studies spanning several decades, with the majority of research indicating a positive relationship between maltreatment and offending in adolescence and/or adulthood [13, 40, 42, 49]. At the same time, the strength of the relationship between maltreatment and crime has varied across studies, and some research suggests that characteristics of the abuse itself, including when in the life course it is experienced, account for this variation [13, 78].

The proposition that the timing of maltreatment matters is congruent with one of the main propositions of life-course developmental theories, that the timing of significant life events is important in shaping one's development [18, 57]. However, this tenet has received somewhat limited attention in the cycle of violence literature. In part, this lack of attention is due to the fact that much of the early research on the cycle of violence tended to rely on cross-sectional data and/or retrospective reports of abuse and neglect from adults which often did not assess the specific age(s) at which maltreatment occurred [77]. More recent research has included more prospective studies (e.g., [26, 30, 76, 80]), which are better equipped to establish the temporal ordering between maltreatment and offending, and to examine exactly how the timing of maltreatment affects involvement in crime. Nonetheless, prospective studies are still relatively uncommon. For example, a review of 124 studies which examined the impact of maltreatment on psychological or behavioral health identified only 16 studies which relied on prospective data [49].

Moreover, as we will describe, very few studies have compared the relative impact of maltreatment occurring in childhood versus adolescence on offending during adolescence, which is the stage in the life course in which illegal behaviors are most likely to occur [21]. In addition, there is theoretical debate regarding the developmental period in which abuse and neglect are expected to have the greatest influence on behavioral problems. Some life-course theories posit that maltreatment experienced during childhood will be most likely to lead to adolescent delinquency, whereas other theories hypothesize that adolescent maltreatment will be most likely to increase delinquency [72]. Although these theories tend to agree that maltreatment which persists across multiple stages of development will be most harmful, few studies have tested this assumption or compared the relative impact of limited versus persistent maltreatment on offending during adolescence.

Using a life-course developmental perspective, the current study seeks to provide further insight into the cycle of violence. Prospective data from a relatively large and diverse sample of youth are used to compare the relative effects of childhood only,

<sup>1</sup> Though some scholars have defined the "cycle of violence" as the relationship between physical victimization and later violent and aggressive behavior (see [14, 76]) operationalization of the "cycle of violence" includes acts that are not exclusively physically violent, such as neglectful behavior by parents and arrests for non-violent delinquent acts and crimes. Other research has also described and/or tested the cycle of violence as the relationship between multiple forms of maltreatment, including neglect, and any subsequent criminal behavior in discussions of criminological theory (see [7]). The current study will also rely on a more generalized operationalization of the cycle of violence, to examine the impact of abuse and neglect on varied forms of delinquency and self-reported arrest for any offense.

adolescent only, and persistent maltreatment on adolescent delinquency. We also assess whether or not these relationships vary according to the type of maltreatment experienced, which is another characteristic posited to affect the strength of the cycle of violence [13, 78].

The findings from this study can help inform developmental theories related to the cycle of violence, as well as efforts designed to reduce the impact of maltreatment on offending. Research has shown that youth involved in the juvenile justice system are especially likely to have experienced maltreatment [4, 5]. Such studies have led to calls for more developmental prevention programs to reduce maltreatment and/or its consequences [46, 75], as well as “trauma-informed” rehabilitation services for adolescent offenders that acknowledge the possibility of maltreatment in offenders’ histories [74].

## Review of the Literature

### How Might the Developmental Timing of Maltreatment Affect Adolescent Delinquency?

As mentioned, there is theoretical debate regarding the period in the life course during which maltreatment is most harmful. Developmental psychologists have suggested that maltreatment experienced early in the life course is most likely to impede healthy development and to lead to problem behaviors like aggression and delinquency [13, 54]. According to this perspective, the infant and toddler years are marked by rapid biological, cognitive, and social changes, and these stages contain important milestones which must be achieved, such as forming attachments to others and being able to regulate one’s emotions [13, 63]. The ability to navigate these changes and complete developmental tasks is contingent on the environmental context, and adverse environments reduce one’s ability to succeed in these endeavors [9, 11, 63]. For example, young children who experience maltreatment are less likely to form strong bonds with their parents compared to those who have more positive interactions with their parents [51]. They are also at greater risk for developing a hostile attribution bias, which can lead them to interpret others’ behaviors as threatening and to use aggression in social interactions that others would perceive to be non-threatening [14].

Children who do not successfully complete developmental tasks in the first years of life may also be less equipped to achieve important milestones in subsequent developmental periods [13]. An accumulation of failures can result in a cascading of negative consequences, including offending. For example, children who develop weak attachments to parents are more likely to have problems in their relationships with teachers, perform poorly in school, alienate positive peers, and attract deviant peers, all of which can increase the likelihood of delinquency during adolescence [13, 15, 51]. Moffitt’s [48] developmental taxonomy also identifies maltreatment experienced early in life as particularly problematic in leading to crime; specifically, a pattern of offending that has an early onset and persists throughout the life course. According to Moffitt [48], child neglect and abuse can disrupt the growth of the developing fetus and cause brain injury and neurological impairment. These problems make it more likely that children will have difficult temperaments, problems with emotional regulation, and reduced cognitive skills. These deficits are likely to evoke negative responses from other individuals,

and children will often respond in kind with aggression and disruptive behavior. Because children bring their individual deficits and behavioral problems into every new social context they enter, they are at risk for offending in every subsequent developmental period, from childhood through adolescence and adulthood.

Although there is ample evidence that maltreatment experienced during childhood increases the likelihood of offending in the short and long term [40–42, 78], there is also evidence that not all of those who are maltreated go on to engage in crime. In fact, studies indicate that one-fourth or more of those exposed to maltreatment appear to be resilient to its negative consequences [27, 31, 37, 44]. Some of this research posits that young children do not yet have the cognitive capacity to understand that an abusive event has occurred, which may diminish its negative impact [35]. Children can also experience a range of protective factors, such as intelligence, high self-esteem, and the presence of a caring and supportive adult, which can reduce the chances that maltreatment will lead to offending [13, 31].

Evidence that children can recover from earlier adversities is also consistent with life-course theories, especially Sampson and Laub's [58] age-graded theory of development. Their theory recognizes that childhood risk factors are important in affecting subsequent involvement in crime. However, they also recognize that not all antisocial children persist in their offending behaviors and that many intervening factors (i.e., turning points) can occur to alter an early trajectory of antisocial behavior [57]. At the same time, events that occur during adolescence are salient and will affect behavior during that time period [30, 56]. Social bonds are central to Sampson and Laub's [58] age-graded theory, and they state that bonds to family are important in influencing adolescent behaviors. Abuse and neglect during adolescence may weaken bonds to parents, which can potentially free adolescents to engage in delinquency.

Other life-course theories also view adolescence as a critical period of development. Like childhood, this stage of life is also marked by rapid and significant physical, cognitive, and social growth, including biological changes related to puberty, brain development, and the formation and dissolution of peer and romantic relationships [19, 62]. There are also many important milestones to be met during this period, such as graduating from high school, forming a sense of personal identity, and establishing independence from parents [60, 66]. Adverse environmental experiences such as maltreatment can undermine the successful completion of these tasks and contribute to unsuccessful adaptations such as delinquency.

Although recognizing the importance of early childhood experiences in shaping development, these life-course theories recognize that current life events (both positive and negative) can have a greater impact on contemporaneous behavior compared to past events. Moreover, adolescents may be at particular risk for criminal adaptations to adverse environmental events given that opportunities for delinquency are abundant during this stage of life [21]. Experiencing a major life stressor during this period can make criminal coping a feasible and likely occurrence [2, 30]. In addition, adolescents are more likely than younger children to be aware of the abuse and neglect perpetrated by their parents and to characterize it as harmful. They are also more likely to respond to such events with self-blame, hostility, and anger, and victims may engage in delinquency as a means of coping with these emotions [1, 36, 71].

Although different life-course theories posit different hypotheses regarding the stage of the life course during which maltreatment is most likely to affect adolescent

offending, most of these theories assume that maltreatment experienced in multiple developmental periods is likely to have the greatest impact on problem outcomes such as delinquency [30, 39]. For example, according to Rutter [56], although children can bounce back from an early adversity, resilience is less likely when one experiences trauma in multiple stages of life. Agnew [1] similarly posits that the accumulation of stressors like maltreatment makes positive adaptation less likely and criminal coping more likely. Some studies have demonstrated support for these hypotheses, for example, indicating that victims of chronic maltreatment have less positive outcomes compared to those who experience maltreatment in a more limited time frame [16, 32, 34, 39]. However, relatively few studies have compared the relative impact of abuse experienced in childhood only, adolescence only, and/or both developmental periods on adolescent offending. The current study seeks to address this limitation and contribute to developmental theories assessing the cycle of violence.

### **Prior Research Examining the Relationship Between the Timing of Maltreatment and Adolescent Delinquency**

As mentioned, there is empirical support that maltreatment increases the likelihood of illegal behavior [40, 42, 73, 78]. A recent review of this literature indicated that of the 62 studies assessed, only four failed to find a statistically significant relationship between maltreatment and adolescent or adult offending [42]. Another literature review reported an average effect size of 0.34 across 12 studies which assessed the impact of violence experienced in the home (which was operationalized as children's having experienced abuse or witnessed intimate partner violence) on youth crime [79].

Despite the general support for the cycle of violence, research has also shown variation in the relationship between child maltreatment and offending, with effects differing in size depending on the developmental timing of the abuse and the type of abuse examined. Regarding the first issue, a recent literature review indicated that 11 studies have examined how the developmental timing of maltreatment affected offending during adolescence or adulthood [42]. Our review of the literature indicated that only four studies have compared the effects of childhood only and adolescent only maltreatment on adolescent delinquency. Two of these four studies relied on data from the Rochester Youth Development Study [30, 72], a longitudinal study of 1000 primarily male, African American youth. These studies relied on official records of child maltreatment and self-reported and official records of adolescent delinquency. The first study [72] compared study participants who had no records of maltreatment with those whose maltreatment occurred in childhood only (ages 0 to 11), in adolescence only (ages 12 to 17), and in both developmental periods. The results indicated that, compared to those who had not been maltreated, those with childhood only maltreatment had a greater likelihood of self-reported delinquency at ages 14 to 16 but not at ages 16 to 18. Those experiencing adolescent only and persistent maltreatment (the two groups were combined in this analysis) were more likely than non-maltreated youth to be delinquent at both middle and late adolescence.

The second study [30] found similar results. Compared to individuals with no official records of maltreatment, those who experienced childhood only maltreatment were no more likely to have been arrested, or to report any delinquency at ages 14 to 16 or at ages 16 to 18. However, those who experienced maltreatment in adolescence only

were more likely to have been arrested and to self-report delinquency during both periods of adolescence (ages 14 to 16 and 16 to 18). Those who experienced persistent maltreatment (i.e., had at least one record in childhood and in adolescence) were also at increased risk for arrest and self-reported delinquency compared to the non-maltreated group. The relationship between persistent maltreatment and adolescent offending was similar in size to that of adolescent only maltreatment [30].

The third investigation, a birth cohort study conducted in Queensland, Australia, found that the impact of maltreatment on delinquency was greater for those whose abuse and/or neglect occurred during adolescence or persisted across developmental periods, compared to those who experienced maltreatment only in childhood [67]. Drawing on official data of both maltreatment and delinquency, Stewart et al. [67] found that individuals whose maltreatment was restricted to the early years of life (before age 7) were least likely to have official contact with the juvenile justice system (i.e., formal police cautions or court appearances), compared to those who experienced maltreatment only during adolescence or in childhood and adolescence.

The fourth study investigated the timing of abuse among a longitudinal sample of about 1500 African American youth [47]. Mersky et al. [47] found that those who had official records of maltreatment in childhood (ages 0 to 11) and in adolescence (ages 12 to 17) each had an increased likelihood of having any juvenile court petitions and any petitions for violence, compared to those who were not officially identified as a victim of maltreatment. Victims of adolescent but not childhood maltreatment were also more likely self-report arrests during adolescence.

Evidence from these four studies suggests that the impact of adolescent maltreatment on adolescent offending is stronger than that of childhood maltreatment.<sup>2</sup> However, this conclusion must be regarded as tentative. Although the Australian study had a very large sample of maltreated individuals (nearly 6000 participants), it did not include a comparison group of non-maltreated youth, which limits inferences about the impact of abuse on offending. The other studies had much smaller samples, which led to small numbers of maltreated youth in the different developmental timing groups, especially persistent maltreatment. For example, only 28 youth had records of maltreatment in both childhood and adolescence in the Rochester Youth Development Study [30, 72], and only 20 youth were classified as experiencing persistent maltreatment by Mersky et al. [47]. Given these low numbers, Thornberry et al. [72] combined the adolescent only and persistent maltreatment groups in some analyses, and Mersky et al. [47] chose not to examine the impact of persistent maltreatment on offending. These authors recommended that additional research examine the relative effects of childhood only, adolescent only, and persistent maltreatment. Additional studies are also needed to determine the generalizability of findings, as both the US studies were composed primarily of African American youth.

<sup>2</sup> This literature is mixed regarding the impact on offending during young adulthood. Mersky et al. [47] found that victims of childhood (ages 0 to 11) maltreatment were more likely to have self-reported and official records of arrests in young adulthood (age 26), and one or more convictions for violent crimes, compared to those who had not been maltreated, but adolescent (ages 12 to 17) maltreatment did not predict these outcomes. In contrast, data from the Rochester Youth Development Study [71] showed that victims of adolescent only (ages 12 to 17) and persistent (i.e., childhood and adolescent) maltreatment, but not childhood only (ages 0 to 11) maltreatment, were more likely to self-report and have official records of offending during young adulthood (ages 21 to 23).



A last limitation of this prior research is that only one of the four studies examined the degree to which adolescent delinquency was influenced by both the developmental timing of maltreatment and the type of maltreatment experienced. As previously mentioned, the relationship between maltreatment and offending has been shown to vary in strength according to the type of maltreatment experienced, and some studies have found that particular types of abuse or neglect do not increase criminal involvement [13, 42, 49, 59]. For example, a review of 124 maltreatment studies (only 16 of which relied on prospective data) indicated that physical abuse and neglect were associated with increased child behavioral problems, but there was no evidence of a relationship for emotional maltreatment [49]. Widom's [45, 76] prospective study of children from the midwestern USA indicated that victims of physical abuse and neglect were more likely to have official arrests for violent crimes compared to non-maltreated youth, but victims of sexual abuse did not typically have an increased risk of offending. In addition, a study relying on prospective data from low-income, Caucasian youth from Pennsylvania showed that victims of sexual abuse and physical abuse each had greater externalizing behaviors during adolescence compared to non-abused youth, but victims of neglect did not [25].

Although it is true that different types of maltreatment tend to co-occur and many victims experience multiple forms of abuse and neglect [13, 59], this fact should not deter researchers from investigating the possibility that different forms of maltreatment have different effects on victims. As Widom [78] notes, there is a tendency in the literature "to assume that the effects of sexual or physical abuse or neglect are similar and that we can treat maltreatment as a 'bundle' without disaggregating its various forms." In the literature assessing the developmental timing of abuse, the failure to examine the various types of maltreatment is likely due to the small numbers of maltreated individuals. For example, due to low numbers in certain categories, Thornberry et al. [72] were only able to compare the relative impact of certain types of maltreatment within, but not across, developmental groups. Their results indicated that, among those abused in childhood only (ages 0 to 11), victims of neglect had greater odds of self-reported offending compared to non-victims during early adolescence (ages 14 to 16), but few such relationships were found for victims of physical abuse. Among those who experienced adolescent only (ages 11 to 17) and/or persistent maltreatment (both groups were combined in this analysis), physical abuse, neglect, and sexual abuse predicted increased offending (relative to the non-abused individuals) in early adolescence, but only physical abuse and neglect predicted increased offending in late adolescence [72].

As evident in this review, relatively few studies have examined whether or not the timing and type of maltreatment influences the degree to which victims will engage in delinquency during adolescence. The lack of attention has resulted in a limited developmental understanding of the impact of maltreatment on offending. The goal of the current study is to inform life-course developmental theories by comparing the impact of childhood only, adolescent only, and persistent maltreatment on adolescent offending. This study also seeks to improve upon prior research by assessing the cycle of violence using prospective data which can help ensure that the timing of maltreatment is accurately measured and that maltreatment precedes offending [35]. Two research questions are addressed: (1) to what extent does the timing of maltreatment

influence adolescent delinquency? and (2) to what extent does this relationship vary according to the type of maltreatment experienced?

## Research Methods

### Design and Participants

The current study relies on secondary analysis of data from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN). The LONGSCAN began in 1990 and involved a collection of data from children and families at risk for maltreatment residing in five geographically diverse areas of the USA, including Baltimore, Chicago, San Diego, Seattle, and Chapel Hill, NC [55]. The baseline sample consists of 1354 children and families selected based on having a history of maltreatment according to official records or considered at risk for maltreatment based on risk factors such as low socio-economic status (SES) or young maternal age.<sup>3</sup> Given the sampling design, LONGSCAN participants are at higher risk for having official histories of maltreatment victimization relative to the general population.

At baseline, children were aged 4 to 6 years old, and follow-up assessments occurred every 2 years thereafter, at ages 8, 12, 14, 16, and 18. The analysis of the current study relies on information collected from all interviews through age 18, when adolescent delinquency was measured. At the age 18 wave of collection, 920 participants were interviewed, representing 68% of the baseline sample. No differences in any of the child maltreatment records were found between those who participated in the age 18 assessment and those who dropped out of the study, except that victims of childhood only physical abuse were more likely to attrite than those who were not abused during this time. Also, males were more likely than females to attrite, Blacks were more likely than those from other racial/ethnic groups to participate, and individuals from one of the five sites were more likely to attrite. At the age 18 survey, 898 participants responded to items asking about delinquency and arrest, the dependent variables assessed in the current study. Among these participants, 119 were missing data on control variables. To retain these cases for analyses, Multiply Imputed Chained Equations (MICE) were calculated using the MI procedure in Stata to generate 20 imputed data sets [3, 20].

Table 1 provides the descriptive statistics for the 898 respondents comprising the analysis sample. The sample included slightly more females (56%) than males (44%) and was 56% Black, 25% White, 7% Hispanic, and 13% other racial/ethnicity. Three-fourths (75%) of the sample resided in a household with at least one biological parent.

<sup>3</sup> The sample recruitment methods varied across the five sites. In four sites, families with official records of maltreatment were invited to participate in the study. In the fifth site, families considered at risk for abuse were recruited. Some sites also included comparison groups of families who were reported to child protective services but maltreatment was unsubstantiated, or who had no involvement with child services or no particular risk factors for maltreatment. For further information on the study design, recruitment methods and sample characteristics, refer to the LONGSCAN website (<http://www.unc.edu/depts/sph/longscan/>) and Runyan et al. [55].



**Table 1** Descriptive statistics for study measures

Measure	Mean or %	SD	Min	Max	<i>N</i>
Age (at baseline)	4.55	0.70	3.49	6.57	833
Sex (female = 1)	55.79	–	0	1	898
White	24.75	–	0	1	897
Black	55.63	–	0	1	897
Hispanic	6.58	–	0	1	897
Other race/ethnicity	13.04	–	0	1	897
Family structure <sup>a</sup>	75.00	–	0	1	832
Low household income	57.76	–	0	1	793
Past year any delinquency	39.66	–	0	1	890
Past year delinquency (index)	1.23	2.47	0	18	889
Past year any arrest	16.70	–	0	1	898

<sup>a</sup> Compares those who resided with at least one biological parent (= 1) with those who did not

Participants were relatively low income, with 58% of participant primary caregivers reporting a total household income of less than \$15,000 per year at baseline.

## Dependent Variables—Self-Reported Delinquency and Arrest

### *Past-Year Delinquency*

Adolescent delinquency is based on self-reports from participants completing the LONGSCAN delinquent and violent behavior survey at the age 18 wave of data collection. Survey items were modified from questions used in the Denver Youth Survey [28] by LONGSCAN developers [38]. The delinquency scale used in the current study includes 23 items. Participants were asked to report the number of times in the past year they engaged in property crimes, violent crimes, and weapon carrying (e.g., *In the last year, how many times have you hit to hurt? Stolen a motor vehicle? Carried a hidden weapon?*). The response categories for each item were as follows: 0 = never, 1 = one or two times, 2 = between three and nine times, and 3 = 10 or more times. Two dependent variables were created from these items. The first is a dichotomous measure and indicates whether the participant reported committing at least one of the 23 delinquent acts in the past year (1 = yes, 0 = no). As shown in Table 1, about 40% of LONGSCAN participants reported at least one delinquent act. The second variable is an index (i.e., count) representing the variety delinquent acts reported. This measure was created by dichotomizing each of the 23 delinquent acts (0 = did not engage in this act in the past year, 1 = engaged in this act in the past year), and then adding them together. The index measure was used because responses to a majority of the delinquency items were highly skewed, with most participants reporting never committing a delinquent act in the past year or committing only one offense. As shown in Table 1, LONGSCAN participants reported a mean of 1.2 (SD = 2.47) delinquent acts at age 18.

### *Past-Year Arrest*

The LONGSCAN delinquent and violent behavior survey also included one item about arrest. At age 18, participants were asked: *How many times in the past year have you been arrested?* Response options include 0 = never, 1 = one or two times, 2 = between three and nine times, and 3 = 10 or more times. In the current study, past-year arrest is a dichotomous variable indicating whether the participant reported one or more arrests in the past year (1 = yes, 0 = no). As shown in Table 1, about 17% of participants reported being arrested in the past year at age 18.

### **Independent Variables—Child Maltreatment**

This study relies on official records from Child Protective Services (CPS) to assess the timing and type of maltreatment experienced. Although official reports are likely to underestimate the number of youth who have experienced maltreatment, they are better able to specify when the maltreatment occurred compared to self-reports, especially when reports are collected retrospectively from adults [77]. Individuals may not accurately recall traumatic events that happened in the past due to memory loss and/or recall bias, and they may suppress traumatic events due to embarrassment or trauma caused by the experienced [13, 24, 64]. As such, these self-reports can lead to inaccurate accounts of whether or not and when maltreatment occurred.

At least every 2 years, trained LONGSCAN staff reviewed CPS records for all LONGSCAN participants and coded these data to identify the timing and type of maltreatment using the Modified Maltreatment Coding System (MMCS) created by Barnett et al. [6]. The MMCS has been found to be valid and reliable among multiple samples of youth [8, 43]. The current study classified LONGSCAN participants as victims of maltreatment if they had at least one officially reported allegation. Prior analyses of the LONGSCAN data have also relied on allegations to code classify victims of maltreatment [22, 33, 69], and this research has indicated that child developmental and behavioral outcomes do not vary according to whether allegations or substantiations are used to measure maltreatment [29, 61].

Participants were considered to have experienced any maltreatment if they had one or more allegations of any type of abuse or neglect from ages 0 to 18. Those with no allegations were considered to have no maltreatment history during this period. Participants experiencing any maltreatment were further differentiated as having any official allegations of the four types of maltreatment most likely to be recorded: neglect, physical abuse, emotional abuse, and sexual abuse. Any individual with one or more allegations of a particular type was considered to have experienced that particular form of maltreatment; those with no allegations were classified as having no maltreatment of that type.

For each of the five groups (those experiencing any maltreatment, neglect, physical abuse, emotional abuse, and sexual abuse), we next classified participants according to the developmental timing of the maltreatment. Specifically, we created mutually exclusive groups that categorized participants as having maltreatment records in childhood only, adolescence only, or in both periods (persistent maltreatment).

### *Maltreatment Experienced in Childhood Only*

Consistent with past studies assessing the impact of maltreatment timing on delinquency [47, 72], we created a dichotomous measure of maltreatment experienced in childhood only to identify participants who had one or more allegations of maltreatment between birth and age 11 and no allegations of maltreatment after age 11 (1 = yes, 0 = no).

### *Maltreatment Experienced in Adolescence Only*

Also consistent with past studies [47, 72], we created a dichotomous measure to represent adolescent only maltreatment. This measure identifies participants who had one or more allegations of maltreatment during ages 12 and 17, and no maltreatment during childhood (i.e., prior to age 12).<sup>4</sup>

### *Persistent Maltreatment*

A dichotomous variable was created to indicate whether the participant had at least one allegation of maltreatment in childhood (between birth and age 11), and at least one allegation of maltreatment in adolescence (between ages 12 and 17). Those with at least one allegation in each period were considered victims of persistent maltreatment.

## **Control Variables**

Participant demographic characteristics and study site were included as control variables in the study. The age of the respondent at baseline is a continuous measure based on the participant's date of birth. Participant race/ethnicity is based on the primary caregiver's report at baseline. A series of dummy variables were created to represent this measure. Categories include White, Black, Hispanic, and Other, and White is treated as the reference category. A dummy measure was created to represent the respondent's sex (male = 0, female = 1) and is based on the caregiver reports at baseline. As with other LONGSCAN studies [70], family structure is a dichotomous measure of whether the youth resided with at least one biological parent and is based on information reported by the primary caregiver at the baseline wave of data collection. Low household income is based on reports from the primary caregivers at baseline. The original question used an ordinal scale with eleven categories to measure the total income of the household. Because the responses were not evenly distributed across categories, and to better reflect households with very low income, a dichotomous variable was created to differentiate households with less than \$15,000 in annual income (coded "1") and those with greater than \$15,000 (coded "0"). Last, dummy variables were created to represent the geographical region of the study site in which respondents resided: East, Midwest, Northwest, South, and Southwest. The

<sup>4</sup> Models were also estimated that were identical to those in the current study, with the exception that the adolescent only maltreatment variable was operationalized as participants having at least one official maltreatment allegation between ages 12 and 16 in order to ensure temporal ordering between adolescent maltreatment and delinquency/arrest, given that the latter were reported at the age 18 interview. Results of these models (available upon request) were similar to the findings presented in the [Results](#) section.

Southwestern site was treated as the reference category in the analyses because it contained the largest percentage of respondents (24%).

## Data Analysis

The study's two research questions were investigated using regression analysis. Logistic regression models were estimated for the two dichotomous dependent variables, any past year self-reported delinquency and any past year self-reported arrest. Negative binomial regression models were estimated to examine the third dependent variable, the index of delinquent behaviors, as there were a high number of "0" responses to this measure. All analyses were performed in Stata 13. As mentioned, cases with missing data were retained for analyses by calculating Multiply Imputed Chained Equations (MICE) using the MI procedure in Stata. Twenty imputed data sets were generated [3, 20]. Results reported represent pooled estimates from these 20 imputed data sets.

For each of the three outcomes, five separate models were estimated for each of the five independent variables: any maltreatment, neglect, physical abuse, emotional abuse, and sexual abuse. For each maltreatment type, dummy variables were used to assess the impact of the developmental timing of maltreatment on delinquency and arrest. Each model includes variables representing childhood only maltreatment, adolescence only maltreatment, and persistent maltreatment, with the no maltreatment group serving as the reference group. All control variables were included in all models.

## Results

### The Impact of Maltreatment Timing on Self-Reported Delinquency and Arrest in Adolescence

Before providing the results of the regression analyses, we show in Table 2 the bivariate relationships between maltreatment and delinquency, according to the timing and type of maltreatment. For almost all cases examining any type of maltreatment (i.e., the first row of Table 2), participants with no official allegations of maltreatment had the lowest rates of self-reported delinquency and arrest, and the smallest variety of delinquent acts reported, compared to those experiencing any type of maltreatment in childhood only, adolescence only, and in both periods. However, most of these differences are not statistically ( $p < .05$ ) significant. These patterns are similar when comparing individuals based on the type of maltreatment experienced.

The relationships between maltreatment and self-reported delinquency/arrest are examined in more detail in the multivariate regression analyses shown in Tables 3 and 4. Table 3 displays results from the logistic and negative binomial regression models assessing the relationship between the timing of any maltreatment and adolescent delinquency/arrest. The first set of results suggests that the childhood only (OR = 1.15, n.s.), adolescence only (OR = 2.09, n.s.) and persistent (OR = 1.35, n.s.) maltreatment groups were not significantly ( $p < .05$ )

**Table 2** Bivariate relationships between the timing of maltreatment and adolescent delinquency and arrest

	Any delinquency % Reported	Any arrest % Reported	Delinquency index Mean
No maltreatment ( <i>N</i> = 226)	35.0%	14.2%	0.89
Childhood only ( <i>N</i> = 382)	40.3	15.5	1.39
Adolescence only ( <i>N</i> = 20)	50.0	30.0	2.30
Persistent ( <i>N</i> = 151)	46.0	23.8	1.73 <sup>a</sup>
No neglect ( <i>N</i> = 313)	35.4	14.4	1.01
Childhood only ( <i>N</i> = 376)	42.4	16.8	1.34
Adolescence only ( <i>N</i> = 13)	46.2	23.1	1.77
Persistent ( <i>N</i> = 77)	46.8	28.6 <sup>a</sup>	1.88 <sup>a</sup>
No physical abuse ( <i>N</i> = 494)	36.5	15.2	1.08
Childhood only ( <i>N</i> = 199)	43.6	19.1	1.44
Adolescence only ( <i>N</i> = 35)	50.0	28.6	1.71
Persistent ( <i>N</i> = 51)	54.9 <sup>a</sup>	19.6	2.16 <sup>a</sup>
No emotional abuse ( <i>N</i> = 495)	38.1	16.2	1.12
Childhood only ( <i>N</i> = 217)	39.3 <sup>b</sup>	16.1	1.27 <sup>c</sup>
Adolescence only ( <i>N</i> = 29)	67.9 <sup>a</sup>	27.6	2.18
Persistent ( <i>N</i> = 38)	50.0	26.3	2.55 <sup>a</sup>
No sexual abuse ( <i>N</i> = 628)	40.4	17.0	1.27
Childhood only ( <i>N</i> = 110)	37.4	14.6	1.0
Adolescence only ( <i>N</i> = 25)	33.3	24.0	2.17
Persistent ( <i>N</i> = 16)	56.3	25.0	1.63

<sup>a</sup> Statistically significant ( $p < .05$ ) difference compared to the “no” maltreatment group

<sup>b</sup> Statistically significant ( $p < .05$ ) difference compared to the “adolescence only” maltreatment group

<sup>c</sup> Statistically significant ( $p < .05$ ) difference compared to the “persistent” maltreatment group

different in their odds of reporting any delinquency in adolescence compared to participants with no official maltreatment allegations.

However, significant group differences were found when examining arrest. Specifically, those who had a maltreatment allegation in adolescence only had 3.84 increased odds of reporting an arrest in adolescence ( $p < .05$ ) compared to those with no official allegations, and those in the persistent maltreatment group had 2.53 increased odds of reported an arrest ( $p < .01$ ) compared to those with no allegations. There was no significant relationship between childhood only maltreatment and arrest at age 18 (OR = 1.07, n.s.).

The results also indicate the importance of the timing of any maltreatment when delinquent behavior was measured as an index. Those who had a maltreatment allegation in adolescence only ( $\beta = 1.06$ ,  $p < .01$ ) and those in the persistent maltreatment ( $\beta = 0.60$ ,  $p < .01$ ) groups reported engaging in a greater variety of delinquent acts at age 18 compared to participants who did not have official allegations of maltreatment. There was no significant relationship between childhood only maltreatment and the variety of delinquency at age 18 ( $\beta = 0.24$ , n.s.).

**Table 3** The impact of the timing of any maltreatment on adolescent delinquency and arrest<sup>a</sup>

	Any delinquency <sup>b</sup> OR (SE)	Any arrest <sup>b</sup> OR (SE)	Delinquency index <sup>c</sup> β (SE)
Maltreatment in childhood only <sup>d</sup>	1.15 (.23)	1.07 (.29)	0.24 (.18)
Maltreatment in adolescence only <sup>d</sup>	2.09 (.96)	3.84 (2.14)*	1.06 (.41)**
Persistent maltreatment <sup>d</sup>	1.35 (.32)	2.53 (.80)**	0.60 (.22)**
Age	0.88 (0.15)	1.38 (.32)	-0.22 (.17)
Sex (female = 1)	0.46 (.07)**	0.27 (.05)**	-0.80 (.13)**
White <sup>e</sup>	1.01 (.25)	0.50 (.16)*	-0.13 (.22)
Black <sup>e</sup>	1.17 (.28)	0.89 (.26)	-0.07 (.22)
Hispanic <sup>e</sup>	1.26 (.43)	1.07 (.44)	0.26 (.30)
Family structure	1.19 (.26)	0.84 (.24)	0.17 (.19)
Low household income	1.14 (.20)	1.34 (.33)	0.12 (.15)
Model F test	2.95**	4.63**	4.60**
N	890	898	890

\* $p < .05$ , \*\* $p < .01$

<sup>a</sup> Results reported represent pooled estimates from 20 imputed data sets

<sup>b</sup> Based on logistic regression

<sup>c</sup> Based on negative binomial regression

<sup>d</sup> Reference group is no official maltreatment record

<sup>e</sup> Reference group is other race/ethnicity; control variables representing the LONGSCAN sites are also included in all models

### The Impact of Neglect Timing on Self-Reported Delinquency and Arrest in Adolescence

Table 4 displays results from logistic and negative binomial regression models estimated to assess the relationship between the timing of each of the types of maltreatment and adolescent delinquency/arrest. These models also include all the control variables shown in Table 3; these results are not included in this table (but are available upon request) for ease of presentation. The results shown in Table 4 suggest that the timing of neglect does not influence participant reports of engaging in any delinquency. That is, individuals in the childhood only neglect group were not significantly more likely to report engaging in delinquency compared to those with no official allegations of neglect (OR = 1.32, n.s.). There are also no significant differences in delinquency between those with no maltreatment allegations and participants in the adolescence only group (OR = 2.00, n.s.) and the persistent neglect group (OR = 1.39, n.s.)

There is no significant relationship between childhood only neglect and self-reported arrest at age 18 (OR = 1.24, n.s.) or between adolescence only neglect and arrest at age 18 (OR = 2.04, n.s.). However, those in the persistent neglect group had 2.81 increased odds ( $p < .01$ ) of reporting any arrest at age 18 compared to participants with no official neglect allegations.

Similar results were found when assessing the variety of delinquency. Individuals in the childhood only neglect group ( $\beta = 0.19$ , n.s.) and those in the adolescence only



**Table 4** The impact of physical abuse, sexual abuse, neglect, and emotional abuse timing on adolescent delinquency<sup>a</sup>

	Any delinquency <sup>b</sup> OR (SE)	Any arrest <sup>b</sup> OR (SE)	Delinquency index <sup>c</sup> β (SE)
Neglect			
Childhood only <sup>d</sup>	1.32 (.23)	1.24 (.30)	0.19 (.17)
Adolescence only <sup>d</sup>	2.00 (1.02)	2.04 (1.40)	0.87 (.46)
Persistent <sup>d</sup>	1.39 (.38)	2.81 (.93)**	0.57 (.24)*
Model F test	2.97**	4.34**	4.29**
Physical			
Childhood only <sup>d</sup>	1.25 (.23)	1.21 (.30)	0.20 (.17)
Adolescence only <sup>d</sup>	1.59 (.56)	2.80 (1.15)*	0.36 (.32)
Persistent <sup>d</sup>	2.00 (.58)*	1.96 (.71)	0.77 (.26)**
Model F test	3.16**	4.17**	4.38**
Emotional			
Childhood only <sup>d</sup>	1.01 (.19)	1.10 (.27)	0.08 (.17)
Adolescence only <sup>d</sup>	2.95 (1.07)**	2.91 (1.29)*	0.63 (.32)*
Persistent <sup>d</sup>	1.28 (.43)	1.82 (.76)	0.81 (.30)**
Model F test	3.31**	4.09**	4.47**
Sexual			
Childhood only <sup>d</sup>	0.84 (.19)	1.01 (.31)	-0.18 (.21)
Adolescence only <sup>d</sup>	1.08 (.46)	3.32 (1.62)*	0.82 (.37)*
Persistent <sup>d</sup>	2.03 (1.04)	2.90 (1.84)	0.44 (.46)
Model F test	2.92**	4.07**	4.26**
N	890	898	890

\* $p < .05$ , \*\* $p < .01$ <sup>a</sup> Results reported represent pooled estimates from 20 imputed data sets<sup>b</sup> Based on logistic regression<sup>c</sup> Based on negative binomial regression<sup>d</sup> Reference group is no official maltreatment record; age, sex, race/ethnicity, family structure, income, and site are control measures in all models

group ( $\beta = 0.87$ , n.s.) did not report engaging in a significantly different variety of delinquent acts compared to those with no maltreatment allegations. However, the persistent neglect maltreatment group reported engaging in a significantly greater variety of delinquent acts ( $\beta = 0.57$ ,  $p < .05$ ) compared to the non-maltreated group.

### The Impact of Physical Abuse Timing on Self-Reported Delinquency and Arrest in Adolescence

For the model estimating the relationship between physical abuse timing and any delinquency, results indicate that participants in the childhood only physical abuse group (OR = 1.25, n.s.) and participants in the adolescence only group (OR = 1.59, n.s.) were not significantly more likely to engage in any delinquent behavior compared to

those who had no official allegations of physical abuse. However, those in the persistent physical abuse group had 2.00 increased odds ( $p < .05$ ) of reporting any delinquency compared to those with no allegations.

Results of models examining the relationship between physical abuse and past year arrest indicated that participants in the adolescence only physical abuse group had 2.80 increased odds ( $p < .05$ ) of reporting one or more arrests at age 18 compared to participants who had no official physical abuse allegations. Individuals in the childhood only group were not significantly more likely to report past-year arrest compared to their counterparts in the no allegations group ( $OR = 1.21$ , n.s.), nor were individuals in the persistent physical abuse group ( $OR = 1.96$ , n.s.)

In the last set of analyses examining physical abuse, individuals in the persistent group reported engaging in a significantly greater variety of delinquent acts at age 18 ( $\beta = 0.77$ ,  $p < .01$ ) compared to the no allegations group. In contrast, participants in the childhood only group ( $\beta = 0.20$ , n.s.) and the adolescence only group ( $\beta = 0.36$ , n.s.) did not report engaging in a significantly different variety of delinquent acts compared to participants with no allegations.

### **The Impact of Emotional Abuse Timing on Self-Reported Delinquency and Arrest in Adolescence**

Results indicate that participants in the adolescence only emotional abuse group had 2.95 greater odds ( $p < .01$ ) of engaging in delinquent behavior at age 18 compared to those with no emotional abuse allegations. However, there were no significant differences in the odds of any self-reported delinquent behavior between those in the childhood only emotional abuse group and those in the no allegation group ( $OR = 1.01$ , n.s.) or between those in the persistent emotional abuse group and those in the no allegation group ( $OR = 1.28$ , n.s.)

Similar results were found when examining self reported arrest. Those in the adolescence only group had 2.91 greater odds ( $p < .05$ ) of reporting any arrests at age 18 compared to participants in the no allegations group. However, those in the childhood only group did not significantly differ in self-reported arrest compared to those with no allegations of emotional abuse ( $OR = 1.10$ , n.s.), nor did those in the persistent emotional abuse group ( $OR = 1.82$ , n.s.).

Results suggested that the timing of emotional abuse influenced the self-reported variety of delinquency. Participants in the adolescence only group reported engaging in a significantly greater variety of delinquent acts compared to their counterparts in the no allegation group ( $\beta = 0.63$ ,  $p < .05$ ). Individuals in the persistent group also engaged in a significantly greater variety delinquent acts compared to those who with no official allegations of emotional abuse ( $\beta = 0.81$ ,  $p < .01$ .) There were no significant differences in the variety of delinquent acts committed by those in childhood only group and those who had no official history of emotional abuse ( $\beta = 0.08$ , n.s.).

### **The Impact of Sexual Abuse Timing on Self-Reported Delinquency and Arrest in Adolescence**

The results of models assessing the relationship between sexual abuse timing indicated that those in the childhood only sexual abuse group were not significantly more likely

to report committing any delinquent act at age 18 compared to those with no official history of sexual abuse (OR = 0.84, n.s.). Those in adolescence only group (OR = 1.08, n.s.) and those in the persistent group (OR = 2.03, n.s.) also did not differ from those with no allegations in the odds of any self-reported delinquent behavior.

Participants in the adolescence only group had 3.32 increased odds ( $p < .05$ ) of reporting past year arrest at age 18 compared to those with no sexual abuse allegations. In contrast, the past year arrest incidence of participants in the childhood only group (OR = 1.01, n.s.) and those in the persistent group (OR = 2.90, n.s.) did not significantly differ from that of participants with no allegations of sexual abuse.

Compared to those with no maltreatment allegations, the childhood only ( $\beta = -0.18$ , n.s.) and persistent ( $\beta = 0.44$ , n.s.) maltreatment groups did not significantly differ in their variety of reported delinquent acts. However, those with an allegation of sexual abuse in adolescence only reported a significantly higher variety of delinquent acts compared to individuals with no such allegations ( $\beta = 0.82$ ,  $p < .05$ ).

### **Additional Comparisons of the Timing of Maltreatment on Adolescent Delinquency/Arrest**

The results shown in Tables 3 and 4 compared participants who had childhood only, adolescent only, and persistent allegations of maltreatment to those with no maltreatment allegations. To further investigate the impact of the timing of maltreatment on delinquency, additional analyses (available upon request) were conducted in which the childhood only and persistent groups served as the reference groups. The first set of results showed that the adolescence only and persistent maltreatment groups were more likely to report any arrests and to report a greater variety of delinquent behaviors compared to those in the childhood only group. When differentiated by maltreatment type, those with adolescent only sexual abuse and adolescent only emotional abuse were more likely to report arrests and to report a greater variety of delinquent offenses compared to those in the childhood only group. Those with persistent neglect were more likely to report arrests, and those with persistent emotional abuse allegations reported engaging in a greater variety of delinquent acts, compared to the childhood only maltreatment group. In the second set of results, when the persistent maltreatment group was omitted from analyses, no differences in self-reported delinquency or arrest were found between the persistent maltreatment groups and those who had maltreatment allegations of any type in adolescence only.

### **Discussion and Conclusion**

This study investigated the cycle of violence from a life-course developmental perspective to examine the extent to which the timing of maltreatment influences adolescent delinquency. Based on prospective data from 898 participants from the LONGSCAN study, the results suggest that official allegations of maltreatment which occur during adolescence only (operationalized in this study as ages 12 to 17), as well as allegations which occur during both childhood (from birth through age 11) and adolescence increase the likelihood of self-reported delinquency and arrest, as well as the variety of delinquent acts, reported in late adolescence (i.e., age 18). However,

allegations of maltreatment which were recorded during childhood only were not associated with later delinquency or arrest. In addition, in many cases, those with adolescent only and persistent maltreatment were more likely than those with childhood only maltreatment allegations to be arrested and to engage in a greater variety of delinquent acts.

These findings are consistent with past research from the Rochester Youth Development Study [30, 72] and a birth cohort study in Queensland, Australia [67], both of which suggested that maltreatment experienced in adolescence is more likely to result in adolescent delinquency compared to childhood only maltreatment. The results also support life-course theories that recognize adolescence as a significant period of development characterized by many significant life events and turning points [19, 57, 62, 66]. According to such theories, adverse environmental experiences such as maltreatment can undermine the successful completion of these tasks, disrupt bonds to family members, and place great strain on individuals, all of which can increase the likelihood of engaging in delinquency, especially since opportunities to engage in criminal behavior are abundant in this period [2, 30, 57]. In addition, because of their greater cognitive awareness, adolescents are more likely than children to feel anger and depression when they are victimized, and which may, in turn, increase the chances that they will engage in delinquent acts to cope with these negative emotions [1, 36, 71].

However, the findings are contrary to other life-course theories, such as Moffitt's [48], which posit that childhood adversities will have the greatest impact on problem behaviors such as delinquency. These theories point out that childhood is an especially critical period of physical, cognitive, and social development, and that negative environments will undermine children's ability to engage in prosocial behavior and to successfully transition to later developmental stages [13, 63]. Nonetheless, these theories recognize the potential for children to be resilient and to "bounce back" from childhood trauma, especially if no further adversities are encountered [13, 31]. Such was the case in the current study, as childhood only maltreatment was not associated with adolescent delinquency/arrest, but persistent maltreatment increased the likelihood of such outcomes. It should be noted, however, that the relative effects of persistent and adolescent only maltreatment were similar, which provides further support for adolescence as a particularly critical period of development, at least in terms of the cycle of violence.

Expanding upon prior research, this study also examined the relationship between age of maltreatment and delinquency/arrest across different types of maltreatment. Although it is true that many victims experience multiple forms of abuse and neglect [13, 59], prior research indicates that different forms of maltreatment have different effects on victims [78], and the current study suggests that this variation is also true when examining the timing of maltreatment (as shown in Table 4). For example, the results indicated that neglect experienced in adolescence only was not related to any of the outcomes, while physical, emotional, and sexual abuse during adolescence only were each related to at least one of the outcomes. In addition, persistent neglect, physical abuse, and emotional abuse were all related to at least one outcome, but persistent sexual abuse was not. These findings are somewhat different from those reported by Thornberry et al. [72], who found that adolescent/persistent neglect and physical abuse were each associated with adolescent offending, but sexual abuse was not. However, these comparisons are made with caution, as Thornberry et al. [72]

combined “adolescent only” and “persistent” groups in these analyses and neither they nor other research has assessed the impact of the timing of emotional abuse on delinquency.

Although the current findings suggest that the impact of maltreatment on adolescent offending varies according to the timing and the type of maltreatment experienced, the results warrant replication given the limited body of research assessing these relationships and certain limitations of the current study. For example, the study outcomes did not differentiate violent and non-violent offending, frequency of offending, or more serious contact with the justice system (e.g., convictions or incarceration), and additional research is needed which includes a greater diversity of outcomes, especially to examine the impact of the timing of maltreatment on more serious and/or frequent offending. In addition, the reliance on official reports of maltreatment certainly underestimates the number of study participants who experienced abuse and neglect, as most child abuse incidences are not reported to authorities [68]. As such, it is possible that some LONGSCAN participants classified as non-maltreated in this study actually experienced abuse and neglect, making ours a conservative investigation of the cycle of violence. In addition, although the number of maltreated individuals in this study was relatively large, the numbers of participants who had allegations in the adolescent only period and those in the persistent group were reduced, particularly in some of the sub-analyses, and additional, larger-scale studies are necessary to further investigate the impact of the timing of maltreatment on delinquency. It should also be noted that LONGSCAN participants were recruited to the study because families had been reported for maltreatment or were considered at-risk for maltreatment based on parent and family socio-demographic characteristics. As such, results of the current study cannot be generalized to individuals with fewer risk factors. Additionally, some of the participants had allegations of multiple types of maltreatment in each developmental period.<sup>5</sup> As a result, the analyses cannot accurately assess the unique impact of one type of maltreatment on delinquency or arrest, and studies which assess the combined impact of multiple forms of maltreatment may find a stronger effect of maltreatment on delinquency.

Despite these limitations, results indicate support that the developmental timing of maltreatment impacts the cycle of violence and that this relationship might vary by type of maltreatment. Relatively few studies have assessed this issue, and the current project adds to and expands this body of research and informs life-course theories of development. Strengths of the study include its use of prospective data and analysis of how the impact of maltreatment timing varied by type of maltreatment. The sample was also diverse in race/ethnicity and included both males and females.

The results of this study have substantive importance and support current initiatives calling for trauma-informed services for juvenile delinquents [74]. Our findings suggest that adolescent maltreatment is more strongly related to delinquent behavior than childhood only maltreatment, which means that some proportion of youth involved in the juvenile justice system will likely be coping with relatively recent exposure to

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<sup>5</sup> According to descriptive statistics, correlations between the different types of maltreatment ranged from 0.14 to 0.41 when assessing childhood only abuse and neglect, from 0.05 to 0.24 when assessing adolescence only maltreatment, and from 0.13 to 0.42 for persistent maltreatment.

trauma. In order to interrupt the cycle of violence, services that address these traumatic experiences should be integrated into juvenile justice diversion and treatment programs.

The findings also support the need for early prevention strategies to prevent the occurrence of childhood trauma and to reduce its negative consequences. For example, community-based services can be offered to prevent parents from engaging in maltreatment, such as home visitation programs that help new parents care for newborn children [23, 50], as well as interventions that help parents of older children provide supportive and nurturing care-giving and avoid abusive behaviors [10, 12, 53]. Prevention programs can also be delivered to children to help them learn to control impulses, develop social and emotional learning skills, and develop better coping mechanisms to reduce the likelihood that they will respond to maltreatment with problem behaviors [17, 52]. Finally, prevention and intervention programs that show evidence of reducing post-traumatic stress disorder symptoms among adolescents, such as the Cognitive Behavioral Intervention for Trauma in Schools (CBITS), could be implemented in the juvenile justice system or community to help victims more positively cope with adversities like child abuse and neglect [65].

**Acknowledgements** This research was not supported by grant funding from any public, commercial, or non-profit agency. We thank the National Data Archive on Child Abuse and Neglect (NDACAN) for making the data available for this project.

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