



# Exploring the Link Between Neighborhood Violence and Health Among African-American and Latinx Youth Returning Home After Incarceration

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## Abstract

**Background** African-American and Latinx youth are disproportionately exposed to neighborhood violence and are overrepresented in the U.S. juvenile justice system. Perceived neighborhood violence is associated with negative health outcomes.

**Objective** We examined associations between African-American and Latinx youths' perceived neighborhood violence and health during reentry after juvenile incarceration.

**Methods** Youth (n=50) returning home after incarceration completed health questionnaires at one-month post-incarceration. A subset of participants (n=25 youth) also participated in one-on-one, semi-structured longitudinal interviews.

**Results** Twenty-eight (56%) participants reported neighborhood violence in quantitative surveys. Quantitative analyses revealed that perceived neighborhood violence was positively associated with reported asthma diagnosis, doctor recommendations for medical follow-up, perceived stress, and adverse childhood experiences (ACEs). Perceived neighborhood violence was negatively correlated with perceived family support. Stress ratings were associated with ACE total scores, moderate to severe depression symptoms, and family support. Moderate-to-severe depression symptoms were significantly correlated with lower ratings of family support. Qualitative interviews supplemented our quantitative findings and showed that responses to perceived neighborhood violence were linked to specific health-related behaviors, such as substance use or avoidance of gang activity.

**Conclusions** Overall, our quantitative and qualitative results indicate that perceived neighborhood violence is associated with many negative psychosocial factors that could impact overall health and wellbeing of youth undergoing reentry. Treatment implications include the development and testing of family-centered interventions that help improve the transition back into the community for youth undergoing reentry and especially, their access to evidence-based treatment, including leveraging family telehealth substance use interventions.

**Keywords** Neighborhood violence · Reentry · Juvenile justice · Youth incarceration · Health

Neighborhood violence is a major public health concern that disproportionately affects Latinx and African-American youth from low socioeconomic backgrounds and likely interrelates with the high rates of justice involvement among youth of color (Estrada-Martínez et al., 2013; Sampson et al., 1997). Youth exposed to violence in their communities can experience a wide range of adverse consequences, including disruptive behaviors (Javdani et al., 2014), substance use (Crouch et al., 2000; Fehon et al., 2001), academic difficulties (Delaney-Black et al., 2002; Schwartz & Gorman, 2003), antisocial behaviors (Chauhan & Reppucci, 2009), traumatic stress (Fowler et al., 2009), and internalizing symptoms (Lambert et al., 2008; for review see Cooley-Strickland et al., 2009). The link between neighborhood violence and negative outcomes appears especially strong among incarcerated youth. For example, many studies have linked neighborhood violence to recidivism (Grunwald et al., 2010) and depressive symptomatology among justice-impacted youth (Martin et al., 1998; Ritakallio et al., 2006). However, few studies have examined the connection between intersecting and diverse indicators of health (e.g., which includes physical, mental, and social wellbeing; see World Health Organization, 1948) and neighborhood violence among youth during the critical community reentry period after incarceration. Given the disproportionate exposure to neighborhood violence of African-American and Latinx youth and their overrepresentation in the U.S. juvenile justice system (Owen & Wallace, 2020; Sickmund et al., 2019), the link between neighborhood violence and health among this vulnerable population during the crucial transition of community reentry merits further exploration.

## Neighborhood Context and Health

When considering risk factors related to youth health, one should recognize that youth involved in the justice system find themselves embedded within a number of other environmental systems. Bronfenbrenner's (1979) Ecological Systems Theory stresses the importance of contextualizing developmental outcomes within environmental systems. The microsystem, also known as the "immediate system," encompasses family and neighborhood factors that likely interact and may increase or mitigate risks related to overall health. Despite its impact on health, neighborhood context, in particular perceived neighborhood violence, often goes overlooked even though it strongly interrelates with risk of incarceration and negative determinants of health (Onifade et al., 2011). A better understanding of the relationships between perceived neighborhood violence and various indicators of health can help inform multi-level treatment approaches that better support youth at risk of recidivism to prevent further system involvement and promote optimal health and successful reentry into the community.

## Neighborhood Violence and Health

Low-income African-American and Latinx youth are disproportionately exposed to neighborhood violence, broadly defined as experiencing, witnessing, or learning of violent events (e.g., gang and drug activity, possession of weapons, sexual assault, homicide) in one's neighborhood (see Clark et al., 2008; Cooley et al., 1995; Martinez & Richters, 1993 for similar operationalization). For example, a large study examining community violence

among a nationally representative sample found that 57% of African-American and 50% of Latinx youth reported exposure to violence in their neighborhood, compared to 30% of White youth (Crouch et al., 2000). More recently, neighborhood violence has been linked to worse physical health outcomes among youth, such as higher rates of asthma (Gupta et al., 2010; Sternthal et al., 2010), biological stress reactions (Theall et al., 2017), cardiometabolic health problems (Miller et al., 2018), and obesity (Assari et al., 2016; for authoritative review see Moffitt 2013), as well as less physical activity (Echeverria et al., 2014). Furthermore, youth involved in the justice system experience even higher rates of morbidity and community violence exposure than same-age, non-justice involved peers (Barnert et al., 2016), and increased community violence exposure has been associated with higher levels of delinquent activity (i.e., gun possession, gang involvement) and recidivism (Chauhan et al., 2009; Wood et al., 2002). Taken together, these previous findings suggest a strong potential link between neighborhood violence and various indicators of health among justice-involved youth and further supports the examination of this link during the high-risk period of community reentry.

In addition to physical health challenges, neighborhood violence is a persistent source of danger, stress, depression, and other psychosocial challenges (see Martin et al., 1998; Rasmussen et al., 2004; Ritakallio et al., 2006). Importantly, examining the neighborhood context that justice-involved youth return to after incarceration is important, given that it can promote or deter youths' successful reentry outcomes. Previous studies have found that adverse childhood experiences (ACEs) are highly concentrated in youth living in disadvantaged areas (Coulton et al., 2007), particularly among youth residing in neighborhoods characterized by violence (Quinn et al., 2017). Previous studies have found that justice-involved youth, are at higher risk of experiencing more trauma (i.e., ACEs) and at the same time are disproportionately exposed to more neighborhood violence (Baglivio et al., 2017), compared to youth in the general population. Estimates show that 50% of juvenile justice youth experience four or more ACEs before the age of 18 (Baglivio et al., 2014), compared to 12.5% of peers in the general population (Felitti et al., 1998). Understanding the link between neighborhood violence and other forms of ACEs among justice-involved youth can inform both risk assessments and future treatment developments, such as the delivery of trauma-informed care in carceral or correctional settings and neighborhood-based violence prevention programs and policies for the reentry period (Coulton et al., 2007).

## Juvenile Justice Youth and Neighborhood Violence

Although it is well established that neighborhood violence is linked to both physical, mental, and social wellbeing factors, these links are not well documented or understood among Latinx and African-American youth undergoing community reentry after incarceration. During reentry, youth balance multiple responsibilities, such as re-enrolling in school and fulfilling court requirements, in addition to re-adjusting to home and neighborhood environments. An in-depth qualitative study on reentry (Abrams, 2006) illustrated that juvenile justice youth experience high levels of stress, particularly regarding their ability to cope with “bad influences” related to neighborhood violence. At the same time, youth undergoing reentry report that friends and family facilitate successful transitions home (Abrams, 2006). Yet, to date, no mixed-method studies have specifically examined the perspectives of racial/

ethnic minoritized youth undergoing reentry regarding how they perceive and respond to neighborhood violence and how their responses to neighborhood violence relate to several indicators of health (i.e., physical, mental, and social wellbeing). When examining perceived neighborhood violence and justice-involved youth, it is important to center the perspectives of African-American and Latinx youth because they are disproportionately arrested, detained, and incarcerated (Owen et al., 2020, Sickmund et al., 2019), more likely to live in low-income neighborhoods characterized by violence (Crouch et al., 2000), and more likely to have endured more ACEs (Baglivio et al., 2017).

## Current study

Several areas in the examination of neighborhood violence and health in youth remain understudied, including: (1) mixed method examinations of perceived neighborhood violence, (2) inclusion of several domains of health (including both physical health outcomes as well as psychosocial wellbeing outcomes), (3) examination of perceived neighborhood violence *during* the high-risk period of community reentry, and (4) the centering of African-American and Latinx youth perspectives during reentry. To contribute to the growing literature on neighborhood violence and health outcomes among youth, our current mixed methods study utilized Bronfenbrenner's (1979) Ecological Systems Theory to examine the relationship between perceived neighborhood violence (microsystem) and health (individual) among youth undergoing reentry, all of whom were African-American and Latinx. We focused on subjective youth ratings of perceived neighborhood violence, given that previous research has strongly supported that there are significant variations in subjective versus objective measures of neighborhood violence (Roosa et al., 2009) and given strong empirical support suggesting that youth perceptions and interpretations of safety and neighborhood violence, as compared to parent perceptions, lead to individual differences in youths' responses to neighborhood violence (Gracia et al., 2012). Based on previous seminal studies that have found a strong association between neighborhood violence and health (Assari et al., 2016; Echeverria et al., 2014; Gupta et al., 2010; Miller et al., 2018; Sternthal et al., 2010; Theall et al., 2017), we hypothesized that perceived neighborhood violence would be associated with a wide range of negative health outcomes, including higher rates of health problems (i.e., asthma) and worse mental and social wellbeing (i.e., perceived stress and depression). The qualitative interviews sought to enhance interpretation of quantitative findings by gathering youths' perspectives on how neighborhood violence exposure influences their health. Based on previous qualitative studies of reentry youth (Abrams 2006), we hypothesized that perceived stress and family relationships would emerge as potential mechanisms linking perceived neighborhood violence and health ratings.

## Methods

### Overview of procedures

We conducted secondary analyses using a mixed methods approach to understand the relationship between perceived neighborhood violence and the health of youth undergoing

reentry following incarceration (see Supplementary Material A for interview guide). Quantitative surveys were administered one-month post-incarceration collected self-reported sociodemographic information (e.g., race/ethnicity, gender, detention history), as well as self-reported health measures (i.e., ratings of overall health and asthma diagnosis) and family factors. In addition to the quantitative survey, a subset of participants completed longitudinal, semi-structured interviews at one-, three-, and six-months post-release. Half of the participants who completed the quantitative survey ( $n=25$  out of 50) completed qualitative interviews for a total of 39 completed interviews across the three timepoints. The study team conducted interviews in person or via telephone, and in the preferred Language (i.e., English or Spanish) depending on participant preference. Our team continued interviews saturation of themes about barriers to care were reached or surpassed (Bowen 2008). Semi-structured interviews were conducted in a private setting without parents/caregivers present and lasted 30–60 min. All youth interview participants gave permission to have interviews recorded and recordings were subsequently transcribed into text using a transcription service. Semi-structured interviews explored participants' views towards their health needs and service utilization. Qualitative data ascertained from the semi-structured interviews were coded to examine the link between neighborhood violence and health. Bachelor level research assistants that were trained in quantitative and qualitative data collection techniques conducted the surveys and interviews. However, research assistants that coded the interviews for this study were different from the research assistants that collected the data. For more detailed information regarding the research design of the study see Barnert et al., 2016.

## Participants and recruitment

Youths returning to a home setting after incarceration in a Los Angeles juvenile detention facility (average detention period was six months) who were aged at least 12 years, fluent in English or Spanish, and without severe cognitive delay, were eligible the study. Participants included 50 youth (88% male) recently released from court-mandated residential programs (see Table 1 for sociodemographic characteristics). Recruitment and study enrollment period occurred between November 2016 and March 2018 through a community partnership with a Los Angeles County juvenile justice agency. Our university's Institutional Review Board and the Los Angeles County Juvenile Court approved all study procedures. The study team informed potential participants about the study through flyers provided to youth at the time of their release. Flyers asked youth to contact the research team if they were interested in participating. In addition, with permission from the Institutional Review Board, the court, and probation department, during the study enrollment period, we received the names and telephone numbers of recently released youth in the county. We then called youth and their families to invite them for study participation. Youth released from Los Angeles County residential placement during the enrollment period were potentially eligible to participate. Additional eligibility criteria included fluency in English or Spanish and lack of severe cognitive delay. For quantitative analyses, all youth that were contacted were screened, and anyone who met participation criteria and agreed to participate was included and this strategy yielded a representative sample. For qualitative analyses, however, we used purposive sampling. Specifically, after observing the demographics of the sample that completed quantitative surveys, we purposively sampled to include youth who identified their primary caregiver as male, as we were most in contact with youth's female caregivers (i.e., mothers).

**Table 1** Youth Demographic and Background Characteristics

Variable	All (n=50) % (n)	Neighborhood Violence (n=28) % (n)	No Neighborhood Violence (n=22) % (n)
<b>Gender</b>			
Female	12% (n=6)	14% (n=4)	9% (n=2)
Male	88% (n=44)	86% (n=24)	91% (n=20)
<b>Age</b>			
15–17	62% (n=31)	54% (n=15)	73% (n=16)
18–19	38% (n=19)	46% (n=13)	27% (n=6)
<b>Race/Ethnicity</b>			
African-American/Black	22% (n=11)	11% (n=3)	36% (n=8)
Latinx	70% (n=38)	79% (n=25)	59% (n=13)
Other—Native American	2% (n=1)	0% (n=0)	5% (n=1)
<b>Number of Times Detained</b>			
Once	22% (n=11)	25% (n=7)	18% (n=4)
2–3 times	38% (n=19)	32% (n=9)	45% (n=10)
4 or greater	40% (n=20)	43% (n=12)	36% (n=8)
<b>Adverse Childhood Experiences</b>			
Parent/Guardian Divorced	68% (n=34)	79% (n=22)	55% (n=12)
House Member in Jail	38% (n=19)	50% (n=14)	23% (n=5)
House Member Depressed	12% (n=6)	21% (n=6)	0% (n=0)
No Food or Clothing	10% (n=5)	18% (n=5)	0% (n=0)
Lived with Someone Doing Drugs	22% (n=11)	32% (n=9)	9% (n=2)
Felt Unsupported	14% (n=7)	21% (n=6)	5% (n=1)
Placed in Foster Care	10% (n=5)	7% (n=2)	14% (n=3)
Bullying at School	10% (n=5)	14% (n=4)	5% (n=1)
Parent/Guardian Died	14% (n=7)	21% (n=6)	5% (n=1)
Parent/Guardian Deported	2% (n=1)	0% (n=0)	5% (n=1)
Serious Medical Procedure/Illness	8% (n=4)	7% (n=2)	9% (n=2)
Discrimination	18% (n=9)	32% (n=9)	0% (n=0)
<b>Home Language</b>			
Only English	42% (n=21)	43% (n=12)	41% (n=9)
Bilingual, English is Dominant	16% (n=8)	21% (n=6)	9% (n=2)
Bilingual, Both Equal	28% (n=14)	25% (n=7)	32% (n=7)
Bilingual, Spanish is Dominant	10% (n=5)	4% (n=1)	18% (n=4)
Only Spanish	4% (n=2)	7% (n=2)	0% (n=0)
<b>Household Structure</b>			
Both Biological Parents	24% (n=12)	18% (n=5)	32% (n=7)
Two Parents, One Biological	28% (n=14)	36% (n=10)	18% (n=4)
Single Mother	38% (n=19)	46% (n=13)	27% (n=6)
Single Father	4% (n=2)	0% (n=0)	9% (n=2)
Legal Guardian	6% (n=3)	0% (n=0)	14% (n=3)
<b>Parent Born in Another Country</b>			
Yes	56% (n=28)	61% (n=17)	50% (n=11)
No	44% (n=22)	39% (n=11)	50% (n=11)

Note. Totals may not add to 100% due to rounding

We also used purposive sampling to include more female youth in our study. Race/ethnicity was not part of purposive sampling, and the ethnic/racial background of our sample is solely due to overrepresentation of African-American and Latinx youth in the U.S. juvenile justice system and the demographic makeup of the focal county (Los Angeles County). Throughout all interactions, our team emphasized that participation was voluntary, confidential, and had no bearing on participants’ probation status, interactions with the court, or receipt of health services. Each participant’s legal guardian gave informed verbal consent, and youth provided informed verbal assent. Overall, 50 of 113 invited youth participated in the study, resulting in a 44% study response rate, which is a similar response rate to previous studies with justice-impacted youth (Abrams, 2010). Participants received a \$30 gift card for each completed survey or interview.

Table 2 summarizes intercorrelations between all variables of interest. Perceived neighborhood violence was positively correlated with reported asthma diagnosis ( $r(48)=0.32, p<.024$ ), doctor recommendations for medical follow-up ( $r(48)=0.28, p=.050$ ), perceived stress ( $r(48)=0.29, p<.039$ ), and adverse childhood experiences ( $r(48)=0.45, p<.001$ ); and negatively correlated with perceived family support ( $r(48)=-0.30, p=.037$ ). Stress ratings were also significantly associated with ACE total scores ( $r(48)=0.44, p<.001$ ), moderate to severe depression symptoms ( $r(48)=0.34, p=.016$ ), and family support ( $r(48)=-0.53, p<.001$ ). Moderate to severe depression symptoms were significantly correlated with family support ( $r(48)=-0.43, p=.002$ ). Total ACE score was marginally correlated with family support ( $r(48)=-0.26, p<.075$ )

**Table 2** Correlations among key variables of interest

	Perceived Neighborhood Violence	Asthma	Doctor Recommendation for Medical Evaluation	Overall Health Rating	Moderate to Severe Depression Symptoms	Perceived Stress	ACE Total
<b>Asthma</b>	0.32*						
<b>Doctor Recommendation for Medical Evaluation</b>	0.28*	0.19					
<b>Overall Health Rating</b>	0.03	0.01	-0.12				
<b>Moderate to Severe Depression Symptoms</b>	0.16	0.01	0.01	-0.11			
<b>Perceived Stress</b>	0.29*	0.11	0.11	0.18	0.34*		
<b>ACE Total<sup>#</sup></b>	0.45**	0.15	0.08	0.05	0.15	0.44**	
<b>Family Support</b>	-0.30*	-0.19	-0.02	-0.22	-0.43*	-0.53**	-0.26

Note: \* Correlation significant at the 0.05 level; \*\* Correlation significant at the 0.01 level

<sup>#</sup> ACE total does not include neighborhood violence rating. Per the guidance of our institutional review board and partnering agencies, we excluded five items related to abuse and neglect to reduce the potential need for mandated reporting, and thus breach of confidentiality. We also removed the item asking about previous arrests, detention, and incarceration as it was redundant with our sample solely comprised of youth confined to court-mandated residential placement

## Measures

### Physical Health

**Overall health.** We utilized two items to ascertain more subjective ratings of overall health from youth. First, we accessed whether youth were recommended by their physicians to have a medical follow-up by asking the following Yes or No question: “Did the pediatricians in juvenile hall or camp recommend that you see a medical doctor or pediatrician after you got home from camp? Answers from this item were dummy coded as Yes=1 or No=0. In addition, youth were also asked to rate their overall health on a 5-point Likert scale from excellent (1) to poor (5). We dichotomized this overall health rating by recoding excellent, very good, and good ratings into 0, and fair and poor as 1. For qualitative coding of health, we utilized a broad definition of health (see World Health Organization, 1948) to include physical (i.e., sleep hygiene, exercise), mental/behavioral (i.e., symptoms of depression and substance use), and social wellbeing (i.e., stress and coping).

**Asthma.** We asked participants to self-report all current medical diagnoses that were being treated or monitored by a physician. After reviewing all reported primary health diagnoses, we narrowed our focus to asthma, given its strong relationship in previous studies with neighborhood violence (Gupta et al., 2010; Sternthal et al., 2010) and because more than 90% of health diagnoses responses from youth were asthma. All answers were dummy coded for asthma (whereby 0=no diagnosis and 1=asthma diagnosis).

### Mental and Social Wellbeing

**Depression Symptom Severity.** We used the Patient Health Questionnaire (PHQ-8; Kroenke et al., 2009) to measure depression symptom severity ( $M=3.42$ ,  $SD=3.84$ ; range=0–17). The PHQ-8 assesses the severity of eight depressive symptoms via a 4-point Likert scale ranging from “0–Not at all” to “3–Nearly every day.” The PHQ-8 asks participants to rate how much a problem or symptom has bothered them within the last two weeks. The module includes symptoms such as depressed mood (“Feeling down, depressed, or hopeless”) and anhedonia (“Little interest or pleasure in doing things”). The survey used the PHQ-8 and not the PHQ-9, because the PHQ-8 excluded the item on suicide ideation, per institutional review board recommendation to avoid a need to breach confidentiality. Several studies have shown the PHQ-8 as a valid and reliable measure of depression symptom severity (Kroenke et al., 2009). In our sample, the Cronbach alpha was 0.727.

**Perceived Stress.** To measure experience of stress, we used the PSS-10 ( $M=11.94$ ,  $SD=7.58$ ; range=0–29; Cohen et al., 1983). The PSS-10 measures the level to which an individual perceives their life as stressful. The scale asks participants to rate how often they experienced certain feelings or thoughts within the last month on a 5-point Likert scale ranging from “0–Never” to “4–Very Often.” Items range from feeling overwhelmed (“How often have you felt difficulties were so high that you could not overcome them”) to perceptions of coping resources (“How often have you felt confident about your ability to handle personal problems”). Several studies demonstrate the validity and reliability of the PSS-10 as a measure of perceived stress (in our sample  $\alpha=0.814$ ; see Taylor 2015 for psychometric properties).



**Adverse Childhood Experiences (ACEs).** We used a modified version of the Center for Youth Wellness Adverse Childhood Experiences Questionnaire (CYW ACE-Q) Teen Self-Report to measure ACEs ( $M=2.29$ ,  $SD=2.05$ ; range=0–12; Bucci et al., 2015). The original CYW ACE-Q contains a total of 19 items that are divided into two sections; Sect. 1 includes the traditional 10 ACE items (i.e., parental divorce, living with a family member with mental illness, living with a family member that was previously incarcerated, food insecurity, witnessing domestic violence, childhood abuse [neglect, physical abuse, verbal abuse, sexual abuse] etc.), while Sect. 2 includes nine items assessing for exposure to additional life stressors identified by experts and community stakeholders as relevant to youth served in community clinics (i.e., foster care involvement, bullying, parent/guardian death, parent/guardian separation due to deportation/immigration, serious medical procedure/illness, violence in neighborhood, discrimination, youth intimate partner violence and youth arrests/incarceration (see Purewal et al., 2016). Per the guidance of our institutional review board and partnering agencies, we excluded five items related to abuse and neglect to reduce the potential need for mandated reporting and thus breach confidentiality. We also removed the item asking about previous arrests, detention, and incarceration as it was redundant with our sample solely comprised of youth confined to court-mandated residential placement. Our total ACE score also did not include the neighborhood violence item since it was our main variable of interest. In total, we did not include seven items (four from Sect. 1 and three from Sect. 2) from the original CYW ACE-Q. Several studies have used abbreviated versions of the ACE-Q (i.e., only include the traditional 10 items from Sect. 1) to assess ACEs in justice-impacted youth populations (e.g., see Baglivio et al., 2014). The Cronbach alpha for the CYW ACE-Q was 0.729 in our sample.

**Family Support.** Perceived family support was ascertained through three questions (“How much do you feel your family understands you?” “How much do you and your family have fun together?” and “How much do you feel your family pays attention to you?”) from the National Longitudinal Study of Adolescent to Adult Health (see Harris et al., 2009). The three items were rated on a 6-point scale ranging from “1–Not at all” to “5–Very much” ( $M=11.77$ ,  $SD=3.07$ ; range=4–15). The Cronbach alpha for this measure was 0.792.

**Perceived Neighborhood Violence (PNV).** Participants reported exposure to neighborhood violence, both quantitatively and qualitatively. In quantitative surveys administered one-month post-incarceration, youth responded “Yes” or “No” to one item on the ACE-Q stating, “You have often seen or heard violence in the neighborhood or in your school neighborhood” (see Goldman-Mellor et al., 2016 for similar single item methodology). In total, 56% of youth endorsed having experienced neighborhood violence on the quantitative surveys. For our qualitative coding definition of neighborhood violence, we used a broader definition to include witnessing, hearing about, or being exposed to a wide range of violent events, including gang and drug activity, physical aggression/homicide, weapons, sexual assault, and theft (for similar methodology see Clark et al., 2008; Cooley et al., 1995; Martinez & Richters, 1993). During semi-structured interviews, youth discussed their neighborhood violence exposure more deeply when describing their reentry experience. Our qualitative analyses revealed higher rates of perceived neighborhood violence (84% of youth that completed semi-structured interview).

**Semi-Structured Interview Guide.** The interview tool asked youths’ perspectives towards their health and treatment services across the reentry period, with an emphasis on barriers to treatment use. Although the semi-structured interview guide did not specifically inquire

about neighborhood violence, youth were also prompted to describe their home and school environments, including their relationships with family and peers.

## Data Analysis

We performed statistical analyses of the quantitative data using SPSS for Mac, Version 24 (IBM Corp., 2016). First, we ran descriptive statistics to characterize our sample. We next conducted a series of chi-squared tests to assess group differences between youth exposed to neighborhood violence versus not exposed. We then ran chi-square tests to ascertain odds ratios for dichotomous health outcomes (i.e., asthma diagnosis, doctor recommendation for medical follow-up) and independent samples t-test to estimate Cohen's *d* for continuous mental and social wellbeing measures (i.e., self-reported stress). All statistically significant ( $p < .05$ ) results were followed with analyses of covariance (ANCOVAs) and binary logistic regressions.

## Qualitative analysis

For the qualitative analysis, semi-structured interviews were audio-recorded, professionally transcribed, and checked for accuracy by two research assistants. Initial semi-structured interviews were designed to assess factors influencing health during reentry, and we performed secondary analyses of the interviews to code for neighborhood violence themes. For the qualitative analysis, we defined neighborhood violence as participants' descriptions of perceived violence in their immediate context, including their neighborhood and school. This definition included direct involvement in neighborhood violence as well as hearing or witnessing violence (see Gracia et al., 2012 for similar operationalization). After completing the quantitative analysis, we performed thematic analysis (see Braun & Clarke 2006) of qualitative interview transcripts using Dedoose software (Version 8.3.35) to understand the relationship between neighborhood violence and health. To assist with conceptualization of the interviews, all the qualitative interviews were classified as reporting perceived neighborhood violence versus not based on the quantitative report of violence exposure on the ACE-Q. Of the 25 youth who completed open-ended interviews, 13 reported neighborhood violence in the quantitative analyses, and 12 did not report neighborhood violence. Our research team open-coded the transcripts to develop a preliminary codebook, examining the relationship between neighborhood violence and health, and then performed iterative coding until reaching a consensus on the codebook. When looking at participant descriptions of neighborhood violence, researchers coded all instances when participants discussed exposure to neighborhood violence, including in the transcripts of youth who reported exposure to neighborhood violence on the quantitative surveys as well as those who did not. Next, two team members blinded to classifications of neighborhood violence coded transcripts independently and met with lead and senior authors to discuss discrepancies (see Barnert et al., 2016 for description of qualitative methodology). Upon completion of coding, to inform our interpretation of the data, researchers examined for any qualitative differences between interviewee participants who reported neighborhood violence versus those who did not. Finally, codes were then extrapolated into larger themes about the relationship between neighborhood violence and health during reentry.

## Results

### Characteristics of the Study Population

Table 1 displays the sociodemographic characteristics of the 50 surveyed youth. Consistent with the demographics of the justice population in our focal county, all of the study participants were African-American or Latinx (with the exception of one youth who identified as Native American), and the majority identified as male and had been detained multiple times (Herz et al., 2017). Youth who completed interviews at any time point did not significantly differ on any variables of interest (i.e., neighborhood violence, asthma, stress, trauma, and family support) compared to those who did not complete semi-structured interviews. As such, we believe the qualitative interviews offer a representative narrative of the 50 youth in our study.

Table 3 summarizes differences in health between youth who reported neighborhood violence and those who did not. Of the 50 participants who completed the survey, 28 (56%) reported exposure to neighborhood violence. Youth who reported perceived neighborhood

**Table 3** Health and psychosocial correlates of neighborhood violence

Physical and Behavioral Health	Neighborhood Violence N=28 %	No Neighborhood Violence N=22 %	<i>p</i> <sup>a</sup>	Odds Ratio (OR) [95% CI]	<i>p</i> with covariates <sup>b</sup>
Asthma Diagnosis	30%	4.5%	<i>p</i> = .024	8.84 [1.01, 77.40]	0.071
Doctor Recommendation for Medical Evaluation	50%	22.7%	<i>p</i> = .049	3.40 [.98, 11.78]	0.139
Overall Health Rating (Fair/Poor)	10.7%	9%	<i>p</i> = .849	1.20 [0.18, 7.89]	0.931
Moderate to Severe Depression Symptoms	14.2%	4.5%	<i>p</i> = .254	3.50 [0.36, 33.82]	0.364
Psychosocial Problems	PNV N=28 M (SD)	No PNV N=22 M (SD)	<i>p</i> <sup>a</sup>	Cohen's D	<i>p</i> with covariates <sup>c</sup>
Perceived Stress	13.89 (8.19)	9.46 (6.02)	<i>p</i> = .039	0.605	0.045
ACE Total <sup>+</sup>	3.11 (2.21)	1.27 (1.28)	<i>p</i> = .001	0.998	0.003
Family Support	11.18 (3.27)	13.00 (2.58)	<i>p</i> = .037	0.609	0.011

Note. PNV=Perceived Neighborhood Violence; ACE=Adverse Childhood Experience; Moderate to severe depression was measured via the PHQ-8 scores that were equal or greater than 10.

<sup>+</sup> ACE total does not include neighborhood violence rating. Per the guidance of our institutional review board and partnering agencies, we excluded five items related to abuse and neglect to reduce the potential need for mandated reporting, and thus breach of confidentiality. We also removed the item asking about previous arrests, detention, and incarceration as it was redundant with our sample solely comprised of youth confined to court-mandated residential placement

<sup>a</sup> Independent samples t-test if continuous or chi-square significance if dichotomous variable.

<sup>b</sup> Binary logistic regression, covariates included: gender, age, ethnicity, and parents' country of origin

<sup>c</sup> ANCOVA, covariates included: youth's gender, age, ethnicity, and parents' country of origin

violence also reported more health problems; in particular, 30% reported an asthma diagnosis, compared to only 4.5% in the comparison group (OR: 8.84; 95% CI: 1.01, 77.40;  $p=.024$ ). Youth who endorsed neighborhood violence were also more likely to receive a recommendation for a medical follow-up with a doctor/pediatrician after incarceration (OR: 3.40, 95% CI: 0.98, 11.78;  $p=.049$ ). However, after incorporating potential covariance for sociodemographic variables, the link between neighborhood violence and asthma ( $p=.071$ ) and between neighborhood violence and medical follow-up with a doctor/pediatrician after incarceration ( $p=.139$ ) were no longer significant. After adjusting for sociodemographic characteristics (i.e., gender, age, ethnicity, and parents' country of origin), binary logistic regression revealed that perceived neighborhood violence was associated with more perceived stress ( $p=.040$ ;  $d=0.605$ ), higher ACE total scores ( $p<.001$ ;  $d=0.998$ ), and lower

**Table 4** Youth characterizations of neighborhood violence during reentry

Characterization	Example Quote(s)
Alcohol and Drugs	Cause you know if you've seen or if you know, but sometimes there's parents that smoke with their kids, or do drugs with their kids, or do bad stuff with their kids, you know? My old friends smoking and not going to school, ditching classes, or just not showing up to school in general. That was kind of the biggest distraction, and just being out in the streets mostly.
Gang Activity	Cause I have friends too, I know, like homies that the whole family is gang-banging, they're all doing drugs and shit. Like, you go to their house and you see nothing but bad stuff. But it's cool cause it's like ... that's nothing new. Well, the best thing to do is move out... if it's gang related and you're in the same neighborhood, they're going to bounce and come out again. They're going to come back out; so they're best to move.
Theft	I got involved with bangers, people just like doing that. You learn different things [referring to learning how to steal].
Weapon Exposure and Death	When I was in jail, my best friend got my murdered. Coming home, I felt like I had no feelings. I didn't care about nothing or nobody. I still don't. I can't feel... They already killed everybody and what I love. So the boy, didn't shoot the boy or nothing he just pulled the gun out like give me your car keys and give me your chain and the boy gave it to him and the boy just stood there and my friend just drove away.
Verbal or Physical Aggression	And she coming at me sick, like she coming at me like that's what she expect me to do, she expect me to put my hands on her.
Unspecified Neighborhood Violence	A lot of people go to jail and that's where they feel safest. Come on, free clothes... free food... free healthcare.

perceived family support ( $p=.040$ ;  $d=0.609$ ). All effect sizes, as estimated by Cohen’s  $d$ , were in the large range (Cohen, 1988)

### Qualitative findings

In our qualitative results, we identified two themes about the relationship between neighborhood violence and health: (1) youth characterizations of neighborhood violence during reentry, and (2) potential mechanisms linking neighborhood violence with health and well-being during reentry.

#### Theme 1: Youth characterization of Neighborhood Violence during Reentry

When asked about reentry challenges, many youths discussed struggles with negative social and environmental influences that met our applied definition of neighborhood violence. We categorized the types of neighborhood violence youth were exposed to during reentry as: alcohol and drug use, gang activity, theft, weapon exposure and death, verbal or physical aggression, and non-specific descriptions of neighborhood violence. Table 4 shows representative quotes for each of these sub-themes. In general, we did not find consistent dif-

**Table 5** Mechanisms linking neighborhood violence with health and wellbeing

Response to Neighborhood Violence	Example Quotes
Engage in Neighborhood Violence	<p><u>Substance use:</u> When I would go, at first it would be more like I wanted to go out just for friends; go out to the beach, well somewhere. Then later I got involved with drinking and smoking. So, it was mostly because I wanted to do that. When I got into that, I wouldn’t come home at all ... I just want to go smoke and, not give a fuck and just leave the house. <i>16-year-old female</i></p> <p>I mean, I’d be good and I’d stop for at least a month, and then I just started smoking again... I’d be bored. It just seemed normal. When I’m bored, it’s just the temptation I guess... Pretty much all the friends I hang out with, yeah, pretty much. <i>16-year-old male</i></p> <p><u>Family conflict:</u> My mom, she kind of like...me and her kind of starting to bump heads already. Like she think I’m back in the streets. I do be with my friends. <i>17-year-old female</i></p>
Avoid Neighborhood Violence	<p><u>Reduced physical activity levels:</u> I used to play [basketball and baseball] in placement, but when I was busted no more... the park was kind of dangerous. <i>18-year-old male</i></p> <p><u>Feelings of isolation and anger:</u> I got a little bit angry because my mom sometimes tells me that “Oh why do you do that, don’t be going on that side, don’t do nothing dumb,” but I always tell her that I can’t because I’m on probation and it bugs me because I feel like I haven’t got my freedom like that. <i>17-year-old-male</i></p>

ferences in qualitative descriptions of neighborhood violence in the first five sub-themes between the youth who reported exposure to neighborhood violence in the quantitative surveys versus those who did not. However, we did find qualitative differences when youth described non-specific descriptions of neighborhood violence (i.e., the sixth sub-theme). We describe these differences in detail below.

**Alcohol and Drug Use.** The most common type of neighborhood violence reported by youth in interviews was alcohol and drug use in their neighborhood. Youth who reported exposure to alcohol and drugs in their neighborhood expressed a desire to abstain from or reduce substance use during reentry but felt pressure from their peers to resume use. Some youth also reported that it was hard for them to avoid drugs and alcohol because their parents or family members used at home. Some youth stated that they smoked marijuana at home when they were bored or with friends at school, but they also shared that marijuana use also led to violation of their probation and recidivism risk. However, marijuana use was more frequently viewed by youth as not problematic because it increased their conflict with their caregivers. Youth who used drugs also reported smoking cigarettes, and related that they did so because others around them tempted them to smoke cigarettes. Many youths linked their tobacco smoking to their poor health and “weak lungs.”

**Gang Activity.** Gang activity was less frequently reported during interviews. Those who did report gang activity explained that gangs taught or perpetuated risky behaviors, like stealing and drug use. For example, when asked about learning to steal, one youth stated, “I got involved with bangers, people just like doing that. You learn different things.” Other youth reported that that being involved in gangs exposed them to more drug use. Another youth mentioned that it was “normal” to have friends that were in gangs and oftentimes many family members were involved in gangs. Thus, gang involvement was perceived as a normal part of everyday life. Other youth described a need to escape gang activity in their neighborhood. As one youth stated, “The best thing to do is move out [of the area]... if it’s gang related and you’re in the same neighborhood, they’re going to bounce and come out again,” indicating that gang influences in their neighborhoods were perceived as pervasive and unavoidable.

**Theft.** Theft was less commonly described as a type of neighborhood violence. Of the three youth who discussed theft, one youth said that theft allowed them to obtain items that they could not afford (e.g., clothes), while other said theft was motivated by peer pressure or desires to gain or maintain social status. For example, one youth discussed stealing to gain approval from gang member peers and said, “If you’re not scared, then they like you because you’re not scared. If you’re not afraid of getting locked up for shoplifting or doing a beer run or going to do this and all that, then they like you.” Another youth reported she was seen with a peer that who was involved in armed robberies, and that this ultimately led to violations of her own probation and eventually recidivism.

**Weapon Exposure and Death.** Interrelated with theft and burglary was exposure to weapons. One youth shared that she was arrested after security camera footage revealed she was with a peer who stole a car using a gun to threaten the car owner. This same participant also reported the murder of a close friend from a shooting that occurred during the her incarceration. While only one youth spontaneously discussed gun violence, she was significantly impacted. She reported being detained again because of the incident and discussed how gun violence in her neighborhood made her feel “numb” when she walked around her neighborhood because it reminded her of the death of her close friend.

**Verbal or Physical Aggression.** Youth also described exposure to yelling and physical conflict. One youth explained how her frequent exposure to verbal or physical aggression led to the normalization of physical violence: I'm so used to going up on people my age or even grown people. Because when I was 14 and 15, I was fighting grown people, grown women—27, 28, 30, 40 [years old]— all the time. So, I'm used to like, "Girl what are you talking about?" I'm not going to yell. I'm going to get mad. I'm going to get mad. I'm going to beat you up, and I'm going to carry about my day.

Overall, youth rarely reported specific instances where they fell victim to physical violence and more often focused on their past aggression and struggles to manage their anger or frustrations, given that these behaviors were seen as "normal" in their neighborhoods. When discussing verbal or physical aggression in their neighborhoods, youth often hinted at the threat of violence and opportunities to re-engage in aggressive behaviors.

**Unspecified Neighborhood Violence.** Lastly, the second most common type of neighborhood violence reported was exposure to unspecified violence, defined as youth feeling unsafe in their neighborhood without a specific attribution to the type of violence that contributed to a sense of unsafety. Many youths connected a general sense of unsafety to the lack of resources in their neighborhood. For example, one youth reported "A lot of people go to jail and that's where they feel safest. Come on, free clothes... free food... free health-care." This youth discussed how incarceration felt safer than her neighborhood because it spared youth the dangers of the neighborhood and helped meet basic needs such as food and shelter.

## Theme 2: potential mechanisms linking Neighborhood Violence with Health and Wellbeing

We identified two mechanisms linking neighborhood violence to health during reentry: (1) avoidance of neighborhood violence, and (2) engagement in neighborhood violence (see Table 5).

**Avoidance of Neighborhood Violence.** To prevent engagement in behaviors that youth viewed as unwanted or counterproductive to their health and wellbeing, youth described taking deliberate efforts to avoid certain people, environments, and situations in their homes, school, and neighborhoods. For example, youth described avoiding situations or people that could lead to substance use. Specifically, some youth shared that they maintained sobriety by minimizing exposure to peers who engaged in substance use. Spending more time at home and with family was described as a common strategy to avoid "bad influences." Other youth discussed several situations in their environment as unsafe, including returning to school or attending social gatherings because they feared they might get in trouble by re-engaging in drug and alcohol use and then possibly return to detention. Other youth reported that physical exercise was a positive habit they developed in detention. However, youth felt unable to exercise in their neighborhood because they felt the community spaces were unsafe. For example, some youth avoided exercising in their neighborhood park because they felt it wasn't a safe space to be in. This avoidance of "unsafe spaces" led to less physical activity, more unstructured time at home, and sometimes other health-detracting behaviors like smoking.

Although avoiding neighborhood influence during reentry was viewed as health-promoting, avoidance sometimes detracted from youths' health and wellbeing as well. Youth who actively avoided negative influences often reported feelings of isolation and insufficient social support as they cut ties with their peers and attempted to insert themselves into new, more productive social environments where they did not feel as readily accepted. Other youth reported more conflict with parent and family members because they spent more time at home to avoid negative influences in the neighborhood. Yet, for some youth, avoidance of negative peer influence led to improved family relationships. One youth stated, "I like being close to all my cousins. You know that. Since I've been out, I haven't been partying with all my friends... I mainly just chill with my cousins now. I'm just around my family all the time." Although youth reported avoidance of peers and drugs and alcohol in their neighborhood as difficult, some youth linked this avoidance to improved social support and stronger family relationships.

**Engagement in Neighborhood Violence.** Participants described that they commonly responded to neighborhood violence during reentry by engaging in behaviors that they viewed as detracting from their overall health and wellbeing. The most common health-detracting behavior described by youth was drug and alcohol use, with marijuana being the most reported substance. Engaging in substance use was closely tied to youths' peer associations. For example, one youth reported that she felt a "temptation" from all her friends to start smoking marijuana again. Although this youth had abstained for marijuana use for an extended period, she said it was hard to avoid smoking marijuana because her friends were smoking around her. Of the participants who did engage in substance use, there was a general trend of viewing cigarettes as an addiction with negative health consequences, whereas they had more mixed views on the health impacts of marijuana use. While youth cited that cigarette use can cause lung problems, some youth perceived marijuana use as beneficial for managing stress, anger, and insomnia. Finally, some youth reported that gang involvement and drug use resulted in parent conflict, which led to more stress and hopelessness. For example, one youth described, "My mom... me and her kind of starting to bump heads already. Like she thinks I'm back in the streets... My family's not going to make me happy enough. I got to be in the streets with my friends." For this youth, her peers were a source of support, but at the same time, reconnecting with her peers led to more conflict with her mother and ultimately more stress at home.

## Discussion

Quantitative analyses of the relationship between neighborhood violence and health revealed that more than half (56%) of the African-American and Latinx youth undergoing community reentry reported perceived exposure to neighborhood violence. The observed rates of exposure to neighborhood violence are similar to those previously reported among justice-involved youth (Hartinger et al., 2011) and among African-American and Latinx youth living in Los Angeles, California (Aizer, 2007). Consistent with the reports from the youth in our sample, youths' parents and county health providers described similarly high rates of neighborhood violence exposure for youth undergoing reentry in the region (Barnert et al., 2016). Perceived neighborhood violence was linked with a wide range of physical health and psychosocial wellbeing in the quantitative analyses and qualitative analyses,



illuminating how youths' perceptions of neighborhood violence impact their overall health during reentry.

Of note, qualitative analyses revealed higher rates of perceived neighborhood violence as 84% (n=21 out of 25) of youth reported at least one type of perceived neighborhood violence in their qualitative interviews. The discrepancy between the quantitative and qualitative reports of neighborhood violence suggests that youth may have underreported perceived neighborhood violence in the quantitative survey, which would have underestimated the quantitative results. This discrepancy could also be partially explained by the different operationalizations of the quantitative measure of neighborhood violence (i.e., single item asking youth about *often* seen or heard violence in the neighborhood) and the broader qualitative definition (which included gang and drug activity) that did not consider frequency or exposure. A potential mediating factor linking neighborhood violence to lower health and wellbeing could be the *perception* of violence, rather than objective measures of violence itself, and therefore, the normalization of violence and high tolerance (see Quinn et al., 2017) could be a coping strategy that protects youth against adverse physical health outcomes (although potentially bringing other negative socioemotional outcomes). In fact, justice-involved youth that have been exposed to multiple adversities across development and contexts may normalize trauma, which can contribute to a heightened tolerance of violence or aggressive behavior later in life. Another likely contributor for the discrepancy between the interviews and surveys is that youth may not have conceptualized behaviors such as substance use or gang activity as neighborhood violence, leading to lower reports of *perceived* neighborhood violence on the quantitative surveys. Despite these differences, both measures provide important insights into African-American and Latinx youths' perspective of neighborhood violence and how neighborhood violence may affect their health and wellbeing during reentry.

Quantitative analyses indicated a possible association between neighborhood violence and physical health, namely current asthma diagnoses and doctor recommendations for medical follow-up. However, after incorporating potential covariance for sociodemographic variables, the link between asthma and doctor recommendations for medical follow-up and neighborhood violence were no longer significant, likely due to power issues related to our sample size. Another likely explanation for is that some of the sociodemographic variables controlled for in the models (i.e., gender, age, ethnicity, and parents' country of origin) are likely associated with asthma. For example, previous research has found that several sociodemographic variables like gender and race/ethnicity are associated with asthma diagnoses (Hafkamp-de Groen et al., 2013). Yet, the observed bivariate association aligns with prior studies that have found that neighborhood violence predicts asthma prevalence and morbidity (Eldeirawi et al., 2016; Sternthal et al., 2010), particularly through physical (i.e., housing conditions like exposure to pollutants and allergens; Sandel & Wright, 2006) and psychological (i.e., experience of psychological stress; Wright et al., 2004) aspects of the environment. Although our sample size did not permit the examination of pathways to health outcomes, our qualitative analyses highlighted that youth who reported perceived neighborhood violence not only described a higher prevalence of asthma, but also described higher stress levels, lower activity levels, and more substance use (i.e., smoking marijuana). Additionally, low physical activity may serve as a possible mechanism linking perceived neighborhood violence and asthma diagnosis, particularly because perceived lack of neighborhood safety reduces engagement in physical activity (Echeverria et al., 2014; Molnar

et al., 2004), a phenomenon also supported by our qualitative findings. It is important to note that other contextual influences in the environment, like pollution and income levels in high-density cities, may better explain the link between perceived neighborhood violence and asthma (Jeffrey et al., 2006). We attribute the lack of an observed relationship between perceived neighborhood violence and mental health outcomes (e.g., depression symptom severity) to our small sample comprised of mostly males (88%) and brief depression ratings that did not account for suicide ideation. However, our qualitative coding did find a connection between perceived neighborhood violence and hopelessness, particularly among our female participants. The finding is consistent with previous literature that has reported depression symptoms as more common and more severe in adolescent girls (Kouros & Garber, 2014). Additionally, the stigmatization of depression among African-American and Latinx male youth (DuPont-Reyes et al., 2020) may have played a role in the underreporting of their symptoms.

Second, we found in our quantitative analyses that perceived neighborhood violence was associated with poor psychosocial wellbeing, including more perceived stress and less family support. All observed effect sizes were within the large range and remained significant even after controlling for key sociodemographic covariates. This is an important association to highlight, given that reentry African-American and Latinx youth often have to navigate multiple immediate contexts at the same time, including family and neighborhood contexts, particularly with regards to perceived safety, temptations, and social networks. The link between perceived neighborhood violence and stress is consistent with previous findings that have utilized justice-involved African-American adolescent samples (Sun et al., 2020). Our qualitative findings also supported that reported stress is partially explained by the difficulties youth face when avoiding risky relationships and situations during the reentry period, particularly because avoidance of neighborhood violence oftentimes was associated with more time spent at home and therefore more opportunities for family conflict. It is also important to note that African-American and Latinx youth may experience more perceived stress during reentry, particularly because they are returning to neighborhood contexts that increase their odds of recidivism (Grunwald et al., 2010). Our quantitative analyses also indicated that perceived neighborhood violence was linked with perceptions of low family support, which extends previous findings that have linked aspects of the neighborhood context, family dynamics, and youth outcomes (e.g., Tolan et al., 2003). Utilizing longitudinal data of African-American and Latinx youth, Tolan and colleagues (2003) found that parenting behaviors (i.e., low warmth) explained the relationship between neighborhood disorder and ultimate peer deviance and individual offenses. Quantitative ratings of perceived neighborhood violence were also associated with higher levels of exposure to childhood adversity (see Quinn et al., 2017). Of note, previous qualitative studies have found that African-American and Latinx adolescent gang members exposed to more childhood adversity are at higher risk of both continued victimization, including neighborhood violence, and future perpetration (Quinn et al., 2017). This link suggests a potential cycle in which repeated exposure to violence in different contexts leads to a normalization of violence, increased propensity for later violence, aggression, and risky behaviors (Quinn et al., 2017), which may have an especially strong impact during the high stakes period of reentry.

Third, qualitative findings highlight African-American and Latinx youths' perspectives on the types of violence they experienced during reentry. Participants described engagement in neighborhood violence as pervasive and tempting, especially the presence of alcohol and

drugs. The consistent discussion among our sample regarding their struggles with avoiding of substances and achieving sobriety highlights the role of substance use in recidivism for reentry youth. Most, if not all, participants discussed the temptation to resume substance use and other criminal behavior, signaling that the same environmental factors may both initiate and maintain involvement in the justice system. In addition, our findings indicate that substance use is both a component and outcome of perceived neighborhood violence, suggesting that the causal relationship between this link is likely bidirectional and more nuanced than currently understood (White 2016). Furthermore, for most categories of neighborhood violence, participants seldom seemed concerned with falling victim to violence, such as fear of victimization from gang violence, which is consistent with previous findings that report that greater exposure to neighborhood violence is linked to lower perception of risk (Aizer, 2007). This seemingly minimal concern for their physical safety suggests that, for African-American and Latinx youth undergoing reentry, the temptation to engage in criminal behavior might prove more stressful than the violence itself.

The qualitative interviews also described how youth cope with perceived neighborhood violence and how these responses impacted health and wellbeing. Participants acknowledged the difficulty with successful reentry in the context of returning to an environment they perceived as violent and unsafe. Even youth who reported avoiding criminal behavior described reentry as challenging, as many experienced feelings of social isolation from peer groups and hopelessness that violence in their neighborhood was not going to improve. Several participants discussed engagement with negative influences, which ultimately led to more substance use and more conflict with parents. Such adjustments reflect insights from previous studies on youth reentry that suggest viewing change as binary (i.e., total abstinence versus resumed use) may prove unrealistic and overwhelming for African-American and Latinx youth undergoing reentry given other contextual factors (Abrams, 2006). Our qualitative findings suggest that reentry transitions involve multiple challenges and changes that are stressful and require ongoing support from multiple systems, particularly supports around how to effectively cope with adversity present in the immediate context (i.e., home, school, and neighborhood).

## Limitations

Our study limitations should be considered. First, a single youth self-report item accounted for our quantitative measure of neighborhood violence, which may have led to an underestimation of neighborhood violence and could partially explain our discrepancy with our qualitative findings of neighborhood violence. Despite this limitation, our findings indicate that this single-item measure allowed us to capture a more nuanced subjective rating that would otherwise have not been captured in a more objective neighborhood violence measure, like geocoding, which is used to characterize violent crimes in neighborhoods (Schnell et al., 2017). Still, future research can use both subjective and objective measures to better understand how neighborhood violence affects overall health and wellbeing for youth undergoing reentry (see Furr-Holden et al., 2008; Milam et al., 2010). It should be noted, however, that previous studies that have utilized both single-item measures of perceived neighborhood violence in adolescent studies and more objective measures of neighborhood violence (i.e., using a novel geospatial index of police-reported crime incidents) have yielded differential

results, with only single item measures of neighborhood violence predicting psychological distress while objective measures were not significantly associated with any youth outcomes (Goldman-Mellor et al., 2016). Similarly, our qualitative operationalization of neighborhood violence was broad and included alcohol and drug use, which could have impacted our qualitative findings. Second, our indicators of health were also limited by single-item measures assessing current asthma diagnosis, doctor recommendation for medical follow-up and subjective ratings of overall health. More objective and extensive measures of physical health (e.g., medical chart reviews) are needed to better understand how neighborhood violence impacts other aspects of physical health. However, we would like to note that although our asthma measure was limited by a single, self-reported item, it still provided valuable information given that it inquired about current diagnoses that are being treated and monitored by a physician. Third, our small sample size limited the statistical power to detect potential mechanisms and moderators (i.e., race/ethnicity) between neighborhood violence and health. We used cross-sectional quantitative measurements, which precluded us from drawing any conclusions on causal relationships. Larger longitudinal samples are needed to examine pathways to health outcomes among justice-impacted youth. However, our longitudinal, qualitative data were rich. The mixed methods approach allowed quantitative findings to guide qualitative analysis, which centered the voices of justice-involved youth regarding their exposure to and coping with neighborhood violence. Fourth, our sample consisted of majority African-American and Latinx males, as such, more studies to replicate findings among more diverse (i.e., non-Latinx/African-American and non-male) youth undergoing reentry are needed and to examine for potential differences and commonalities between these groups. Fifth, the ACE measure in our study may have underestimated actual rates of maltreatment because we removed six critical items (i.e., ratings of abuse and neglect, and an item asking about previous arrests, detention, and incarceration). The use of our brief item ACE measure limits the validity of the measure and could explain why our ACE score is significantly lower than those reported in samples of justice-involved youth using the full measure (see Baglivio et al., 2016). Sixth, our semi-structured interview guide was not specifically developed to assess perceptions of neighborhood violence. It should be noted however, that discussion regarding neighborhood violence organically emerged during the qualitative interviews because interviewers probed participants to discuss their immediate contexts (i.e., school and home environments), which speaks to the strong impact of neighborhood violence in their lives.

## Implications and future directions

Despite these limitations, our findings can serve as springboards for future studies and can inform programmatic approaches. First, future work should examine how perceived neighborhood violence impacts youth's treatment access, including their treatment seeking, utilization, and engagement with treatment. A better understanding of how perceived neighborhood violence poses barriers to treatment access can help inform policies and novel treatment developments to facilitate treatment access for Black and Latinx youth who are undergoing reentry. Still, estimations of the effect of perceived neighborhood violence on several indices of health outcomes can inform aftercare services for youth undergoing community reentry. For example, African-American and Latinx youth presenting for medical

care should be screened for perceived neighborhood violence exposure, as this can offer a unique opportunity to intervene. Current treatments for reentry youth fail to adequately address that African-American and Latinx justice-impacted youths are overrepresented in neighborhoods characterized by disorganization or criminogenic organization (Sampson, 1997). Given the strong reported link between perceived neighborhood violence and ACEs, our findings support the need for all service providers working with reentry youth of color that are exposed to neighborhood violence to apply a trauma-informed approach to care. Additionally, findings indicate the critical need to increase racial/ethnic minoritized youths' sense of safety across neighborhood environments during reentry. Given that 1 in 1,000 African-American males can expect to be killed by police in their lifetime (Edwards et al., 2019) and that African-American youth are more likely to die by firearm homicide (Bottiani et al., 2021) approaches to increase safety are likely multi-faceted and include addressing policing, which is the entry-point into the carceral system for most youth (Barnert et al., 2016).

Opportunities for interventions in both the immediate home environment and neighborhood environment have emerged and yielded promising results. For example, youth reentry interventions that aim to improve family relationships is a promising target, given that research has consistently found that family support can be a protective factor between community violence and behavioral health outcomes (Hardaway et al., 2016). Additionally, substance use was cited as a common factor associated with both neighborhood violence and risk of recidivism, suggesting that increasing access to trauma-informed substance use interventions that are delivered in community settings can also help mitigate the impact of neighborhood violence during reentry for African-American and Latinx youth. In addition, our findings and the extant literature suggest that neighborhood-level violence prevention interventions for justice-impacted youth will yield stronger effects if they consider the immediate context of youth reentry and are trauma-informed (Corbin et al., 2013). Youth undergoing reentry rely on neighborhood resources and services to reintegrate successfully (Mears & Travis, 2004). Yet neighborhood violence deters youth from accessing needed support, putting them at greater risk of recidivism. School and community-based treatment and preventive interventions informed by youths' insights on how neighborhood violence impacts their health may be more effective, especially when serving African-American and Latinx youth returning to neighborhoods with high rates of violence. Schools are a primary context for social development that provide a unique opportunity for strategies that focus on promoting nonviolent conflict resolution. School settings are ripe contexts for interventions that reduce neighborhood violence and enhance coping strategies that promote optimal health in context of community violence (Spencer & Jones-Walker, 2004). Lastly, mentoring programs uniquely developed for African-American and Latinx youth undergoing reentry can be an effective strategy that help foster a sense of social support and resiliency and thus promote positive reentry outcomes (Abrams et al., 2014).

## Conclusions

Perceived neighborhood violence among African-American and Latinx youth undergoing reentry is associated with a wide range of health outcomes including asthma, stress, and low family support, all of which may exacerbate the challenges of reentry and may increase risk

of recidivism. Previous literature indicates that interventions that are “individually-oriented” have relatively weak effects for reentry youth outcomes, and that a more robust approach would entail incorporating interventions that target “neighborhood-level” factors (Abrams & Snyder 2010). Given the importance that the immediate context has on youth well-being, we urge that future treatment developments for youth undergoing reentry consider contextual factors (e.g., intersectionality of race/ethnicity and gender of youth, neighborhood context) and underlying social determinants of health, particularly exposure to community violence. One potential solution for interventions that consider the social ecology of reentry youths and that at the same time increase access to behavioral health interventions, is the use of family telehealth interventions that can improve both substance use outcomes and family cohesion. Overall, policies and programmatic family interventions targeting root causes of neighborhood violence and trauma, such as barriers to healthcare, inadequate resources, economic inequity and structural racism can improve perceived neighborhood safety, which, based on the voices of the youth in our study, may improve youths’ health and success during reentry.

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