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Perceived Neighborhood Violence and Crime, Emotion Regulation, and PTSD Symptoms Among Justice-Involved, Urban African-American Adolescent Girls

Shufang Sun,

Brown University Alpert Medical School

Natasha Crooks,

Emory University Rollins School of Public Health

Ralph J. DiClemente,

New York University

Jessica M. Sales

Emory University Rollins School of Public Health

Abstract

Objective: African-American adolescent girls in urban areas are overrepresented in the juvenile justice system, and they are also disproportionately impacted by neighborhood violence and crime (NVC), which has been shown to positively associate with posttraumatic stress disorder (PTSD) symptoms. Guided by an ecological (individual X context) perspective, the present study aimed to examine the main and interactive effects of perceived NVC and emotion regulation (ER) strategies in a sample of justice-involved, urban African-American adolescent girls ($n = 85$) following their release from detention centers.

Method: We investigated this research question longitudinally. Multiple linear regression models were conducted. PTSD symptoms at 3 months after release was used as the outcome variable, predicted by ER strategies, perceived NVC, and their interactions before release, controlling for PTSD symptoms and a brief screening of trauma events assessed before release. Simple slope analysis was used to probe significant interaction terms.

Results: The main effects of perceived NVC and dysfunctional ER were significant. A significant interaction effect was found between perceived NVC and internal dysfunction ER at baseline to predict PTSD symptoms at 3 months after release. High levels of internal dysfunctional ER intensified the positive association of baseline perceived NVC and PTSD symptoms.

Correspondence concerning this article should be addressed to Shufang Sun, Department of Psychiatry and Human Behavior, Brown University Alpert Medical School, 167 Point Street, Providence, RI 02903. shufang_sun@brown.edu.
Shufang Sun, Department of Psychiatry and Human Behavior, Brown University Alpert Medical School; Natasha Crooks, Department of Behavioral Science and Health Education, Emory University Rollins School of Public Health; Ralph J. DiClemente, Department of Social and Behavioral Sciences, College of Global Public Health, New York University; Jessica M. Sales, Department of Behavioral Science and Health Education, Emory University Rollins School of Public Health.
Natasha Crooks is now at the Department of Women, Children and Family Health Science, College of Nursing, University of Illinois at Chicago.

Conclusions: Justice-involved African-American adolescent girls who report high NVC and use dysfunctional ER strategies are particularly vulnerable to the development of PTSD symptoms. Interventions with this population may benefit from targeting dysfunctional ER strategies to mitigate or prevent neighborhood violence related PTSD symptoms.

Keywords

justice-involved girls; neighborhood violence; emotion regulation; posttraumatic stress disorder; African American

A pressing public concern for youth is exposure to neighborhood violence and crime (NVC). Neighborhood violence disproportionately affects African-American youth in urban areas: The likelihood of being a victim of violent crimes was recorded twice as much in African-American youth compared with youth of other races, and the risk of exposure to violence is particularly high for African-American youth in urban areas (Bureau of Justice Statistics, 2012). Both cross-sectional and longitudinal studies reveal that perceived neighborhood violence is linked to poorer life outcomes, delinquency, and a variety of internalizing and externalizing problems, including posttraumatic stress disorder (PTSD) symptoms (Butcher, Galanek, Kretschmar, & Flannery, 2015; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009).

A subpopulation affected by neighborhood violence and PTSD is justice-involved African-American adolescent girls, who are overrepresented in the juvenile justice system yet understudied (Logan-Greene, Kim, Quinn, DiClemente, & Voisin, 2018). The burden of PTSD is high for justice-involved youth (e.g., 45.7% according to Rosenberg et al., 2014) compared with youth in the community (approximately 5%; McLaughlin et al., 2013), and the link between perceived NVC (i.e., the perceived frequency of violence and crime occurrence in one's neighborhood) and PTSD is stronger in adolescent females than males (Butcher et al., 2015). Thus, justice-involved African-American adolescent girls, particularly those from low-income, urban areas, may be vulnerable to neighborhood violence-associated PTSD symptoms. Guided by an ecological perspective (person X context), this paper examines emotion regulation as a potential moderator of the association between perceived NVC and PTSD symptoms among justice-involved African-American adolescent girls.

Emotion regulation (ER) refers to automatic or intentional strategies to cope with, influence, or modify one's emotional experiences (Gross, 1998). Being able to regulate one's emotions, particularly negative emotional experiences such as anger and sadness, is a valuable skill and plays a key role in the development of resilience for adolescents (Mestre, Núñez-Lozano, Gómez-Molinero, Zayas, & Guil, 2017). Although whether or not a particular ER strategy is good or bad depends on the context, there are consistent patterns of functional or adaptive ER strategies as well as dysfunctional or maladaptive ER strategies identified by literature on ER among adolescents (Phillips & Power, 2007; Schäfer, Naumann, Holmes, Tuschen-Caffier, & Samson, 2017). Dysfunctional ER or emotion dysregulation is linked to the development of psychopathology, poor academic performance, and juvenile arrest (Compas et al., 2017; Kemp et al., 2017; Schäfer et al., 2017)—all of which are relevant issues for justice-involved African-American youth. In addition,

dysfunctional ER has been found to positively associate with PTSD symptoms in youth, although this relationship has primarily been examined in cross-sectional designed research (Villalta, Smith, Hickin, & Stringaris, 2018).

An ecological perspective posits that health outcomes are explained by individual characteristics, their context at various levels, and the interaction between the two (Golden & Earp, 2012). Thus, applied to justice-involved African-American girls, ER may not only function as a predictor of PTSD but also interact with their perceived NVC to moderate the severity of PTSD symptoms. Some forms of adaptive coping such as functional ER can help youth adjust to a stressful environment as well as to buffer against adverse impact of their environment, whereas dysfunctional ER may further elevate the adverse impact of their environment. Although this interactive relationship has not been examined among justice-involved youth and PTSD symptoms, a recent study found that ER moderated the effect of community violence on the academic performance among youth (King & Mrug, 2018). Successful identification of moderators of perceived NVC on individual levels (e.g., psychological characteristics) can provide valuable information for needed psychosocial interventions to reduce the burden of PTSD in African-American youth affected by juvenile arrests and neighborhood violence.

In the current study with justice-involved, urban African-American adolescent girls, we examine how perceived NVC, ER, and the interaction between the two associate with participants' PTSD symptoms longitudinally. We investigate the above relationships following participants' release from detention facilities, a period during which they may reencounter the stress induced by neighborhood violence and crime (Desai, Falzer, Chapman, & Borum, 2012). Guided by an ecological perspective (individual \times context), we make the following hypotheses:

1. Higher levels of perceived NVC would predict higher levels of PTSD symptoms.
2. Functional ER strategies would negatively predict PTSD symptoms, and dysfunctional ER strategies would be positively linked to PTSD severity.
3. Perceived NVC and ER strategies would interact to predict PTSD symptoms, such that (a) dysfunctional ER would heighten the positive link between perceived NVC and PTSD and (b) functional ER would buffer against the perceived NVC linked PTSD symptoms.

Method

Participants and Study Procedure

Data in this study are from a multifaceted intervention aiming at sexual risk reduction among African-American adolescent girls in the juvenile justice system in an urban Southern city (see Davis et al., 2016 for detailed recruitment, institutional review board approval, and study procedure). Eligibility criteria included (a) female at birth, (b) self-identifying as African American, and (c) being 13–17 years of age. In addition, because the intervention targeted African-American girls at risk for HIV and other sexually transmitted infections, inclusion criteria also included reporting lifetime vaginal intercourse. Potentially

eligible adolescents were informed by a detention facility staff and invited to participate. Screening and enrollment were performed at the facility by an African-American female study recruiter. A two-step process for obtaining consent involved (a) receiving written informed consent from recruited adolescents individually following eligibility screening and a thorough review of the informed consent and the Health Insurance Portability and Accountability Act in a private room and (b) obtaining verbal consent from the parent/guardian of the participant via phone following discussion on the study, informed consent, and the Health Insurance Portability and Accountability Act. Among 393 screened adolescents, 205 were excluded due to not meeting inclusion criteria ($n = 190$), refusal to participate ($n = 14$), and other reasons ($n = 1$). Because the intervention included individual counseling, only data in the control arm were used to examine our hypotheses to avoid potential impact of the intervention in the randomized group. Participants were African-American adolescent girls ($n = 85$) aged 13–17 years ($M = 15.59$, $SD = 1.00$). Assessments took place at baseline (prior to release) and 3 months following release. The average time detained for the current offense was 3.42 days ($SD = 3.93$).

Measures

Perceived neighborhood violence and crime.—This scale is based on the Community Deviance Scale developed for the Project on Human Development in Chicago Neighborhoods (Sampson, Raudenbush, & Earls, 1997). The 11 items asked participants how often (1 = *never*, 2 = *sometimes*, 3 = *often*) various criminal acts occur within their neighborhoods in the past 12 months, such as violent arguments, fights with weapons, robbery, gang conflict, sexual assault, shooting, and murder. Cronbach's α was 0.90, suggesting good internal consistency.

Emotion regulation.—The 21-item Regulation of Emotions Questionnaire-2 (Phillips et al., 2007) assesses the frequency that adolescents use functional and dysfunctional strategies of ER, with internal and external resources. Prior to release, participants were asked to indicate on a 5-point Likert scale on how often they use the listed strategies to regulate emotions. Items map onto four subscales—external functional (e.g., seeking support), internal functional (e.g., self-reflection), external dysfunctional (e.g., bullying others), and internal dysfunctional (e.g., self-harm), and Cronbach's α for subscales were 0.80, 0.78, 0.75, and 0.78, respectively.

PTSD symptoms.—The PTSD Symptom Scale-Self-Report Version (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993), a 17-item self-report measure, was used to assess presence and severity of PTSD symptoms. Participants were asked to rate how often they have been distressed by each symptom on a 4-point Likert scale ranging from 1 to 4. Severity is determined by the total score, ranging from 17 to 68. The PSS-SR has been used in African-American girls and demonstrated good psychometric properties (Gray, Holmes, & Bradford, 2016). Items on the PSS-SR can be categorized into *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, PTSD symptom clusters. Cronbach's α for the three clusters including reexperiencing, avoidance, and arousal were 0.92, 0.88, and 0.88 at baseline and 0.95, 0.91, and 0.94 after release, respectively.

History of trauma exposure/adverse events.—A 12-item, brief trauma screening index (Conger & Elder, 1994) was used at baseline to assess participants' history of traumatic events in the past 12 months. Participants were asked whether they experienced any of the listed traumatic and adverse events (yes/no), such as death of a friend or family member, parents' separation or divorce, experienced injury by oneself or one's caregiver, having oneself or a family member being a victim of a violent crime, and so forth. Scores ranged from 0 to 12, with higher score indicating more exposure to traumatic and adverse events in the past 12 months.

Data Analysis

Preliminary analysis was performed to detect univariate and multivariate outliers and nonnormal distributions. No outlier was detected. Complete cases ($n = 85$ of $n = 93$ in control condition at baseline) were used for analysis. Multiple linear regression analysis was used to investigate the main and interactive effects of NVC and ER at baseline on PTSD symptoms at 3 months following their release. Separate regression models were conducted with the total score of PTSD symptoms after release as the outcome variable predicted by four types of ER strategy \times perceived NVC measured at baseline. Two covariates were included in all models, including PTSD symptoms and history of trauma exposure/adverse events assessed at baseline. All variables were mean centered. For models that yielded significant interaction effects, a simple slopes analysis was used to probe interactions at ± 1 *SD* from the mean of the moderator (Aiken & West, 1991). Post hoc analysis was conducted to further understand the association of significant interaction terms on three clusters of PTSD symptoms.

Results

Main Effects

Multiple regression results are presented in Table 1. After controlling for baseline PTSD symptoms, perceived NVC at baseline was found to be a significant and positive predictor on postrelease PTSD symptoms across all four models (B ranged from 0.28 to 0.34, $p < .01$). Dysfunctional ER strategies at baseline, both external dysfunctional ER ($B = 0.18$, 95% confidence interval = [0.01, 0.36], $SE = 0.09$, $p = .04$) and internal dysfunctional ER ($B = 0.19$ [0.003, 0.38], $SE = 0.09$, $p = .04$), had significant and positive main effects on PTSD symptoms at postrelease.

Interactive Effects

The only significant interaction term was perceived NVC \times internal dysfunctional ER on postrelease PTSD symptoms, $B = 0.20$ [0.06, 0.35], $SE = 0.07$, $p = .006$. Figure 1 illustrates this effect. Simple slope analysis revealed that high levels of internal dysfunctional ER heightened the link between perceived NVC and PTSD ($B = 0.48$, $SE = 0.10$, $p < .0001$). The association between perceived NVC and PTSD did not significantly vary when internal dysfunctional ER was low ($B = 0.07$, $SE = 0.12$, $p = .59$). Post hoc analysis revealed that this interaction (perceived NVC \times internal dysfunctional ER) was significant ($p < .05$) on all clusters of PTSD symptoms (reexperiencing, avoidance, and arousal). Online supplemental

materials presents the post hoc analysis as well as results of univariate and bivariate analyses.

Discussion

Guided by an ecological perspective (Person \times Context), this study examined the predictive roles of perceived NVC and ER as well their interaction on PTSD symptoms among justice-involved, urban African-American adolescent girls following their release from detention facilities. Findings indicated that both perceived NVC and dysfunctional ER (both internal and external) were positively associated with PTSD symptoms at 3 months after release, and internal dysfunctional ER also functioned as a moderator. Specifically, with youth who reported high levels of perceived NVC, PTSD symptoms were more severe for those who used more internal dysfunctional ER strategies.

As predicted, NVC positively associated with postrelease PTSD symptoms, suggesting the powerful and detrimental impact of neighborhood factors, consistent with previous research on the adverse effect of perceived neighborhood violence on mental health among adolescents (Butcher et al., 2015). ER difficulties have been found to correlate with PTSD in youth (Villalta et al., 2018), and this study confirms this link in justice-involved African-American adolescent girls, suggesting the important role of ER on PTSD symptoms in this population, both external (anger, aggression) and internal (emotion suppression, self-criticism) ER. This is consistent with research with adults in that maladaptive ER has stronger association with PTSD symptoms compared with adaptive ER (Seligowski, Lee, Bardeen, & Orcutt, 2015).

Unlike other studies that found functional or adaptive ER as a resilience factor (King et al., 2018), this study did not indicate any predictive or moderating role of functional ER for justice-involved African-American girls. This might indicate the vulnerability of our study population: The adverse effects of unhealthy environmental factors might override any potential positive effects of healthy coping on an individual level such as functional emotion regulation. Furthermore, it is also plausible that the measurement of ER strategies, which is largely based on research in nonjustice-involved youth and youth not significantly affected by neighborhood violence, does not fully capture what may be considered as functional emotion regulation. For instance, external ER strategies that are functional for youth in the general community such as “talk to someone about how I feel” may not be feasible or as culturally congruent for African-American girls in the juvenile justice system and affected by community violence.

For girls facing high levels of perceived NVC, those with higher, rather than lower, internal dysfunctional ER had more severe PTSD symptoms. PTSD symptoms did not vary based on internal dysfunctional ER when the perceived NVC was low. This suggests that interventions are particularly needed for girls who report high NVC as well as internal dysfunctional ER because they may be more susceptible to the development of PTSD. For violence-exposed girls, dysfunctional internal ER strategies such as self-criticism and emotion suppression may maintain and contribute to perceived NVC-linked PTSD symptoms such as emotional numbing, self-blame, and avoidance.

Limitations and Future Research

This study is limited by a number of factors. First, the sample size is small and participants were predominately from low-income, urban areas in the South, which limit the generalizability of findings. Furthermore, because the study was part of a larger trial focused on HIV risk reduction, only girls with a history of vaginal sex were included. Although African-American girls tend to have an earlier sex debut (Biello, Ickovics, Niccolai, Lin, & Kershaw, 2013), there may be unique personality and environmental characteristics associated with this subpopulation of sexually active girls, which also limits the generalizability of the findings. Second, all measures were self-reported and subjected to social desirability. Third, it is important to note that participants' perceived neighborhood violence and crime may reflect their perception of the environment rather than actual crime rate. Previous research has found that perceived NVC is more relevant to psychological distress in an adolescent sample compared with objectively measured NVC (Goldman-Mellor, Margerison-Zilko, Allen, & Cerda, 2016). In our study, perceived NVC could be influenced by PTSD symptoms: Girls who endorse more symptoms may be more likely to view their environment as chaotic and unsafe, which could lead to biased results. Fourth, the screening tool for history of trauma exposure/adverse events was brief, asked participants to indicate events in past 12 months, and did not assess physical or sexual abuse. Furthermore, we did not assess at baseline various factors that could affect PTSD symptoms in this population, such as arrest-related trauma, incarceration in the family, academic performance and school-related difficulties, and so forth. Therefore, we caution any conclusion that perceived NVC is more relevant to PTSD than other sources of trauma. Lastly, there was a lack of factors assessed at other ecological levels such as relationship with a caregiver.

Recognizing limitations, study findings suggest a number of meaningful avenues for future research. To begin with, perceived NVC, which reflects participants' assessment of their environment, may be closely related to but also differ from victimization experiences of community violence (e.g., being robbed, assaulted; Cammack, Lambert, & Ialongo, 2011). Future research may want to unpack the association between the two as well as their potentially differed impact on PTSD symptoms. It is likely that some impact of perceived NVC on PTSD symptoms may be explained by direct incidences of community violence victimization. Second, with regard to ER, future research with justice-involved youth impacted by neighborhood violence, which is a chronic ongoing stressor, needs to further understand functional ER strategies in this population that might be helpful to reduce PTSD symptoms. Third, future research should further delineate the mechanisms by which emotion dysregulation impacts the link between perceived NVC and PTSD symptoms in youth. Longitudinal methods, qualitative research such as diary study may be beneficial to understand the trajectory and key mechanisms of PTSD development, especially for youth using internal dysfunctional ER who report high perceived NVC.

Because findings support an Individual \times Context conceptualization of trauma in this population, there are two major clinical implications. First, PTSD treatment with justice-involved African-American adolescent girls should incorporate emotion regulation skills to enhance resiliency, and interventions that aim to decrease or replace the use of dysfunctional ER strategies may be particularly helpful. Second, mental health interventions need to go

beyond individual and familial levels and should also focus on community-based interventions that increase protection against neighborhood violence for vulnerable youth.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Clinical Impact Statement

This longitudinal study with justice-involved African-American adolescent girls in urban areas found perceived neighborhood violence and crime as well as dysfunctional emotional regulation strategies, predicted posttraumatic stress symptoms following their release from detention facilities. Furthermore, girls who reported frequent violence and crime in their neighborhood and used internal dysfunctional emotional regulation strategies, such as emotional suppression, were particularly vulnerable to the development of posttraumatic stress disorder symptoms. Clinical interventions with justice-involved African-American adolescent girls may benefit from targeting reducing dysfunctional emotion regulation as well as community-level efforts to diminish violence and increase neighborhood safety.

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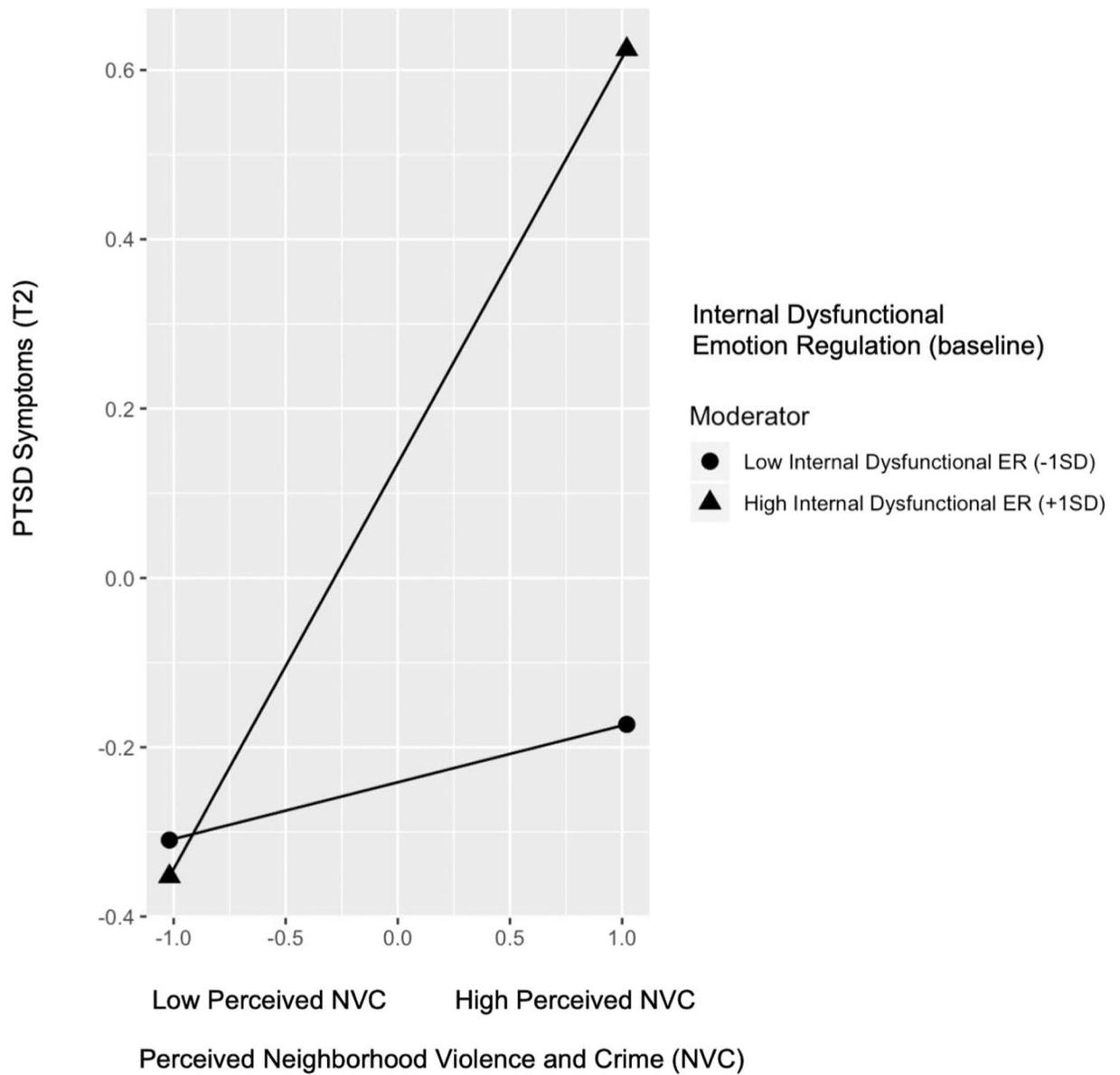


Figure 1. Interaction effect of neighborhood crime and victimization and internal dysfunctional ER at baseline on postrelease PTSD symptoms. T2 = 3 months following participants' release from detention centers. ER, emotion regulation; PTSD, posttraumatic stress disorder.

Postrelease PTSD Symptoms Predicted by Main and Interactive Effects of NCV and ER Strategies at Baseline ($n = 85$)

Table 1

Variables	B	95% CI	SE	P	Model R ²	F
Model 1					.39	11.73
DV: PTSD symptoms (T2)						
PTSD baseline	0.49	[0.30, 0.67]	0.09	<.001 ***		
History of trauma exposure/adverse events	-0.08	[-0.26, 0.11]	0.09	.41		
NVC	0.34	[0.16, 0.52]	0.09	<.001 ***		
External functional ER	-0.007	[-0.19, 0.17]	0.09	.94		
NVC × External Functional	0.05	[-0.12, 0.22]	0.09	.57		
Model 2					.40	12.40
DV: PTSD symptoms (T2)						
PTSD baseline	0.50	[0.31, 0.67]	0.09	<.001 ***		
History of trauma exposure/adverse events	-0.06	[-0.25, 0.13]	0.09	.51		
NVC	0.34	[0.16, 0.52]	0.09	<.001 ***		
Internal functional ER	0.09	[-0.09, 0.27]	0.09	.32		
NVC × Internal Functional	0.09	[-0.05, 0.24]	0.07	.21		
Model 3					.43	13.57
DV: PTSD symptoms (T2)						
PTSD baseline	0.46	[0.28, 0.64]	0.09	<.001 ***		
History of trauma exposure/adverse events	-0.09	[-0.27, 0.09]	0.09	.34		
NVC	0.29	[0.10, 0.47]	0.09	.002 **		
External dysfunctional ER	0.18	[0.01, 0.36]	0.09	.04 *		
NVC × External Dysfunctional	0.11	[-0.06, 0.27]	0.08	.20		
Model 4					.47	15.84
DV: PTSD symptoms (T2)						
PTSD baseline	0.39	[0.20, 0.58]	0.10	<.001 ***		
History of trauma exposure/adverse events	-0.07	[-0.24, 0.10]	0.09	.43		
NVC	0.28	[0.11, 0.45]	0.09	.002 **		
Internal dysfunctional ER	0.19	[0.003, 0.38]	0.09	.04 *		

Variables	<i>B</i>	95% CI	<i>SE</i>	<i>P</i>	Model <i>R</i> ²	<i>F</i>
NVC × Internal Dysfunctional ER	0.20	[0.06, 0.35]	0.07	.006		

Note. DV = dependent variable; NVC = neighborhood violence and crime; ER = emotion regulation; CI = confidence interval; PTSD = posttraumatic stress disorder; T2 = 3 months following participants' release. All variables were mean centered.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Significant findings are presented in bold.