



## Research article

# Childhood trauma and neighborhood-level crime interact in predicting adult posttraumatic stress and major depression symptoms<sup>☆</sup>



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## ARTICLE INFO

## Article history:

Received 13 July 2015

Received in revised form

19 September 2015

Accepted 2 October 2015

Available online 21 October 2015

## Keywords:

Childhood trauma

Major depression

Posttraumatic stress

Neighborhood crime

Cross-level interaction

Multilevel modeling

## ABSTRACT

Previous research has identified several individual-level factors that modify the risk of childhood trauma on adult psychiatric symptoms, including symptoms of major depression (MD) and posttraumatic stress (PTS). Neighborhood-level factors also influence the impact of individual-level exposures on adult psychopathology. However, no prior studies to our knowledge have explored cross-level interactions between childhood trauma and neighborhood-level factors on MD and PTS symptoms. The purpose of this study was therefore to explore cross-level interactions between a neighborhood-level factor – neighborhood-level crime – and childhood trauma on MD and PTS symptoms. Participants in this study ( $N = 3192$ ) were recruited from a large public hospital, and completed self-report inventories of childhood trauma and MD and PTS symptoms. Participant addresses were mapped onto 2010 census tracts, and data on crime within each tract were collected. Multilevel models found a significant cross-level interaction between childhood trauma and neighborhood crime on MD symptoms, such that the influence of high levels of childhood trauma on MD symptoms was enhanced for participants living in high-crime neighborhoods. Supplementary analyses found variation in the strength of cross-level interaction terms by types of childhood trauma and crime, with the strongest associations including emotional neglect paired with personal and property crime. The results provide preliminary support for interventions that help childhood trauma survivors find housing in less vulnerable neighborhoods and build skills to cope with neighborhood crime.

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<sup>☆</sup> This work was primarily supported by the National Institute of Mental Health (T32 MH0130431, R01 MH071537, R01 MH096764, and R01 HD071982). Support was also received from Emory and Grady Memorial Hospital General Clinical Research Center, NIH National Centers for Research Resources (M01RR00039), and Howard Hughes Medical Institute. The contents of this manuscript do not reflect the views of the Department of Veterans Affairs or the United States Government.

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Exposure to childhood trauma is a robust predictor of psychiatric disorders in adulthood (e.g., Fergusson, Boden, & Horwood, 2008; Heim, Shugart, Craighead, & Nemeroff, 2010). For example, a recent review of 44 articles published from 2001 to 2011 found that five forms of childhood trauma (physical, sexual, and emotional abuse, and emotional and physical neglect) have each been associated with a range of adult psychiatric disorders, among them major depressive disorder (MDD) and posttraumatic stress disorder (PTSD) (Carr, Martins, Stingel, Lemgruber, & Juruena, 2013). Childhood trauma has also shown a dose–response effect relationship with psychiatric symptoms in adulthood, such that persons who experienced more severe childhood trauma and multiple forms of childhood trauma are at increased risk for more severe symptoms (Clemmons, Walsh, DiLillo, & Messman-Moore, 2007).

Not all childhood trauma survivors experience psychiatric disorders in adulthood, however. A longitudinal, epidemiologic study, for example, found that although child abuse survivors were at increased risk of having at least one Axis I psychiatric disorder in adulthood relative to other participants, 45.5% of survivors did not meet criteria for any disorder (Collishaw et al., 2007). Efforts to identify factors that enhance or attenuate the risk associated with exposure to childhood trauma could yield important implications for efforts to reduce its mental health burden. Several individual-level moderating factors have been identified to date, including genetic variants and recent stressful life events as risk-enhancing factors (McLaughlin, Conron, Koenen, & Gilman, 2010; Nugent, Tyrka, Carpenter, & Price, 2011), and social support, attachment, and a resilient coping style as risk-attenuating factors (Aspelmeier, Elliott, & Smith, 2007; Roy, Carli, & Sarchiapone, 2011; Sperry & Widom, 2013).

In addition to these individual-level factors, it is likely that characteristics of neighborhoods modify the risk associated with childhood trauma. This is consistent with an ecological perspective on mental health, which posits that mental health is influenced by factors at multiple levels, from individual characteristics and experiences to characteristics of broader sociocultural context, as well as interactions between them (e.g., Bronfenbrenner, 1979; Glass & McAtee, 2006). A large body of research indicates a host of neighborhood-level factors, such as concentrated disadvantage, residential instability, and crime, increase the risk for both childhood trauma exposure and adverse mental health outcomes across the lifespan (e.g., Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Garbarino & Sherman, 1980; Klebanov, Brooks-Gunn, & Duncan, 1994; Leventhal & Brooks-Gunn, 2000). In addition, several studies to date have documented interactions between contemporaneous individual- and neighborhood-level factors in shaping risk for adult psychopathology (Rajaratnam, O'Campo, Caughy, & Mutaner, 2008; Wind & Komproue, 2012). For example, a large study of community-dwelling adults found that the impact of individual-level violence exposure on the likelihood of suffering a depressive or anxiety disorder was enhanced for participants living in high-crime neighborhoods (Stockdale et al., 2007). No published study to our knowledge has explored interactions between individual-level childhood trauma exposure and neighborhood-level factors, including neighborhood-level crime.

Although this issue has not been explored empirically, the presence of cross-level interactions between childhood trauma exposure and neighborhood-level crime could depend in part on both the type of childhood trauma and the nature of the crime. In this vein, the same study of community-dwelling adults found that the impact of lower individual-level social support on the probability of disorder was greater among participants living in communities with higher social isolation, as indicated by lower household occupancy (Stockdale et al., 2007). In contrast, the cross-level interactions between individual-level violence exposure and neighborhood-level social isolation, and between individual-level support and neighborhood-level crime were non-significant, providing preliminary evidence that cross-level interactions might be limited to scenarios wherein the individual- and neighborhood-level exposures are similar in nature.

## Current Study

The primary purpose of the current study was to explore cross-level interactions between individual-level childhood trauma and neighborhood-level crime on major depression (MD) and posttraumatic stress (PTS) symptoms among a sample of adults recruited from a large, urban public hospital. Since no prior studies have explored this topic empirically, these analyses were best conceptualized as exploratory. Nonetheless, we hypothesized that the impact of childhood trauma on MD and PTS symptoms would be enhanced for participants living in higher-crime neighborhoods. Secondarily, we examined variation in patterns of significance for cross-level interactions by the type of childhood trauma (physical, sexual, and emotional abuse, and emotional and physical neglect) and type of crime (personal and property crime) in predicting MD and PTS symptoms. These analyses were, again, exploratory, but we hypothesized that the trends in the data would suggest stronger interactions when the childhood trauma and crime were more similar in nature. For example, we suspected that the interaction would be stronger when individual-level physical abuse was paired with personal crime than with property crime.

## Method

### *Participants and Procedures*

Participants in this study were part of a large ongoing study of patients at a public hospital in Atlanta, Georgia, and were recruited from waiting rooms in the primary care and obstetrics gynecology clinics. Participants completed a battery of survey instruments, including measures of childhood trauma, and MD and PTS symptoms. The survey was administered verbally due to the relatively high rates of impaired literacy in the study community. The battery took between 30 and 90 min to complete, participants were paid \$15 for their participation, and participant home addresses were collected. As

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