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Community-level Adverse Experiences and Emotional Regulation in Children and Adolescents☆

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ABSTRACT

Purpose: The association of adverse childhood experiences (ACEs) with negative health outcomes is well established, and the concept of allostatic load has been proposed as a possible causal mechanism. Most studies measure conventional (household) ACE exposures without accounting for non-conventional (community) ACE exposures, which may underrepresent the adversity experienced by racial/ethnic minorities. We address this gap by calculating the prevalence of both types of ACE exposures for racial/ethnic subgroups. We also examine associations of ACE exposures and emotional regulation in school aged children and youth.
Design and Methods: This study used data (n = 65,680) for a nationally representative sample of children ages 6 to 17 years in the National Survey of Children's Health (2011−2012). Confirmatory factor analysis, descriptive statistics and regression models were used to examine the relationships between ACEs and emotional regulation.
Results: Community level ACE events disproportionately affect ethnic minorities. Some but not all ACEs were significantly and inversely associated with the ability to emotionally regulate in children. Experiencing racism had the strongest negative effect of all ACE variables. The strength of the child-caregiver relationship was associated with increased odds of emotional regulation, independent of exposure to ACEs.
Conclusions: The study supports the need to refine and expand ACE health screenings to fully capture the adversity faced by all children. Emotional regulation is identified as a possible intervention point.
Practice Implications: Expansion of programs that strengthen the child-caregiver relationship and reduce ACEs in early childhood may be a key approach to increasing coping abilities in youth.

Background

Adverse Experiences in Childhood

The seminal "Adverse Childhood Experience Study" conducted by the Centers for Disease Control and Prevention (CDC) and Kaiser Permanente researchers in 1998 found that exposure to adverse events such as child abuse, parental substance abuse or domestic violence in childhood held a strong dose-response relationship to multiple risk factors for several leading causes of death in later life (Felitti et al., 1998). The conclusion that the impact of adverse childhood experiences (ACEs) could reach well into adult years was compelling. The original ACEs survey yielded numerous subsequent studies correlating ACEs to increased risk of distal negative mental and physical health outcomes including substance abuse (Dube et al., 2001), suicide attempts (Dube et al., 2003), and premature mortality (Brown et al., 2009).

Absent from the original ACE measure, however, was adverse events that most often occur in the community, such as exposure to acts of racism or violence. In multiple studies, exposure to community violence and racial discrimination have been significantly associated with adverse outcomes in children, specifically depression, anxiety, and PTSD symptoms (Buka, Stichick, Birdthistle, & Earls, 2001; Burt, Simons, & Gibbons, 2012; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Priest et al., 2013).

Efforts have been made to expand/improve the current understanding of ACE events. Finkelhor, Shattuck, Turner, and Hamby (2013) used data from the National Survey of Children's Exposure to Violence (NatSCEV) to replicate the original ACE study findings and to explore whether the ACE study could be improved upon with a more comprehensive range. The researchers found that the original ACEs were associated with the outcome of psychological distress, but that the association was significantly strengthened by removing some of the ACE items and

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adding other, community-level domains, including violence exposure and peer rejection and victimization (Finkelhor et al., 2013).

Recognizing that both the original ACE study and the Finkelhor et al. (2013) study relied on data collected from predominantly white participants, Cronholm et al. (2015) drew data from the Philadelphia ACEs Survey, a follow up component of a large-scale comprehensive health survey with a representative sample of Southeastern Pennsylvania residents. The researchers were interested in expanding the Kaiser ACEs (which they refer to as "conventional" ACEs) to include community-level indicators such as racism, witnessing violence, bullying, and foster care, presuming that, given the racial and ethnic disparities in health/healthcare, these experiences may also be impacting health outcomes (Cronholm et al., 2015). The researchers found that higher levels of adversity exist in minority and lower income populations, as captured by the community-level indicators. The study concludes that relying only on the original conventional ACEs could considerably underrepresent the prevalence of adversity experienced by some populations (Cronholm et al., 2015).

The inclusion of ACEs measures in the Maternal and Child Health Bureau/Health Resources and Services Administration (MCHB/HRSA) sponsored National Survey of Children's Health (NSCH) 2011–12 questionnaires (Data Resource Center for Child and Adolescent Health, 2013) provided another opportunity for researchers to expand what is known about adverse childhood events occurring both in the household and in the community. Using this unique population-based dataset—which uses weights to provide generalizability to the non-institutionalized child population in the United States—researchers have found a dose-response relationship between adverse event experiences and myriad negative outcomes in childhood and adolescence, including: pediatric asthma (Wing, Gjelsvik, Nocera, & McQuaid, 2015); child obesity (Lynch et al., 2016; Noorzada, 2016); poor dental health (Bright, Alford, Hinojosa, Knapp, & Fernandez-Baca, 2015); and, general health and emotional well-being (Balistreri & Alvira-Hammond, 2016; Bright, Knapp, Hinojosa, Alford, & Bonner, 2016). These findings support the notion that the poor outcomes associated with ACEs begin early in the life course.

The NSCH ACE indicators did not include three child abuse questions (experience of psychological, physical, or sexual abuse) included in the CDC/Kaiser Permanente study. The NSCH did include four measures of household dysfunction (exposure to domestic violence, substance abuse, mental illness, and an incarcerated caretaker) included in the original ACE study and also added two "household dysfunction" questions (divorce and experiencing poverty). Additionally, NSCH added domains external to the household—exposure to violence in the neighborhood and experiencing racial prejudice. This addition provides a new opportunity to explore the prevalence of community-level adversity in a robust, nationally representative sample of children.

Pathways Between Exposure and Outcome

ACEs have been linked to myriad negative outcomes, providing ample evidence to argue for efforts to prevent ACE exposure. However, beyond simply identifying ACEs and their sequelae, a clearer understanding is needed of how best to design *intervention* efforts to both prevent and mitigate the impact of these exposures on the individual. To this end, researchers have begun to try to identify mechanisms that explain how these experiences exert their influence. A research review by Danese and McEwen (2012) found that ACEs have been linked to changes in the nervous, endocrine, and immune systems—negative effects that can often endure into adulthood (Danese & McEwen, 2012). These integrated biological systems mediate allostatic processes, which are the adaptive responses of the body that strive to maintain homeostasis when threatened by changing environmental conditions (Danese & McEwen, 2012). Demand on the allostatic system can lead to allostatic overload, resulting in detrimental physiological consequences (McEwen, 1998). Thus, ACE exposure and the resulting wear and tear on the neurobiological systems may be one potential pathway leading to negative health outcomes. We illustrate a simplified version of this theoretical construct in Fig. 1.

A review of extant literature conducted by Beauchaine, Neuhaus, Zalewski, Crowell, and Potapova (2011) found that while not explicitly organized within an allostatic load framework, numerous studies had found that child maltreatment and other adverse events effected these neurobiological systems, conferring risk for outcomes such as anxiety, depression, impulsivity and disturbed attachments (Beauchaine et al., 2011). Additional studies similarly found that traumatic experiences in children result in stress on the psychological coping systems, resulting in loss of core capacities such as self-regulation and interpersonal relatedness (Cook et al., 2005; Finkelhor, Turner, Ormrod, & Hamby, 2009; Greeson et al., 2011; Spinazzola et al., 2005). In studies using an allostatic load framework, impairment of emotional regulation has been associated with ACE exposure, leading to depression and post-traumatic stress syndrome (Danese et al., 2009; Nanni, Uher, & Danese, 2012).

Yet, not all children manifest negative consequences from early exposure to adverse experiences. Resilience—defined as the capacity to cope effectively with adversity—is common in children (Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Luthar, Cicchetti, & Becker, 2000; Rutter, 1985; Werner, 1993; Werner & Smith, 1989). An ecological conceptual model of the pathways between social support, family wellbeing, quality of parenting and child resilience, proposed by Armstrong et al. (2005) suggests that risk and protective factors can exert influence on the normal developmental processes (Armstrong et al., 2005). For example, positive relationships with adults is positively correlated with child resilience after adversity (Rutter, 2006). Fostering resilience in children exposed to adversity may therefore help to mitigate later negative health outcomes.

Current Study

The association of adverse childhood experiences (ACEs) with negative health outcomes is well established, and the concept of allostatic load has been proposed as a possible causal mechanism. Most studies measure conventional (household) ACE exposures without accounting for non-conventional (community) ACE exposures, which may underrepresent the adversity experienced by racial/ethnic minorities. This study builds on efforts to expand and improve the conventional understanding of ACEs by using a nationally representative sample of children (the NSCH dataset), while also testing the association of the NSCH ACEs to a practical operationalization of allostatic load (emotional regulation/resilience).

Thus, we sought to answer two questions, first, what is the prevalence of community-level adverse experiences, and does the prevalence differ by race/ethnicity? We posit that non-White children will be exposed to community-level ACEs at greater rates than non-Hispanic White children.

Second, we sought to answer the question, what is the relationship between ACEs and an indicator of allostatic load? We hypothesized that ACEs would be negatively associated with emotional regulation in children, holding differential exposure and all known confounders constant. Such an association would suggest a practical point of intervention after an ACE exposure that could mitigate long-term health consequences in the exposed child. The study protocol was reviewed and approved as exempt by the Institutional Review Board at the University of Davis.

Methods

Dataset

This cross-sectional study used data collected in the MCHB/HRSA sponsored National Survey of Children's Health (NSCH, 2011–2012).