The impact of childhood stressful life events on health and behavior in at-risk youth

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A B S T R A C T

Stressful life events experienced in childhood affect heath throughout the lifespan. Given the high prevalence of stressful life events, especially for children at-risk for child welfare involvement, the impacts of these events across different developmental stages need to be better understood. The current study examines the relation between previously experienced stressful life events and psychosocial health and risk behaviors in adolescence. Several links between maltreatment and psychosocial health were found. Namely, youth who had experienced sexual abuse were more likely to report anxious arousal symptoms, youth who had experienced physical maltreatment and emotional maltreatment were more likely to drop out of school, and youth who had experienced neglect were more likely to dropout, have unprotected sex and use cigarettes. Latent class analysis of life events revealed three groups of children with certain patterns of life events: *Chronic*, *Moderate/Declining*, and *Low Life Events*. After accounting for gender, race, and exposure to maltreatment, members of the *Chronic Life Events* group uniquely and significantly predicted higher likelihood of Anger/Irritability, Depression, Intrusive Experiences, and Dissociation on the Trauma Symptom Inventory at age 18. Additionally, members of the *Chronic Life Events* group were significantly more likely to drop out of school, have more sexual partners, be arrested more often and use marijuana or other illicit drugs more often. Membership in the *Moderate/Declining Life Events* group was significantly associated with likelihood of dropping out of school. The amount of stressful life events appears to be strong predictors of psychosocial outcomes and risk behaviors in adolescence. Efforts to intervene and prevent childhood exposure to stressful life events—particularly in children at-risk and/or maltreated—should begin early in life and continue throughout childhood and adolescence.

1. Introduction

Life events (e.g., exposure to violence, legal system involvement, birth of a sibling, illness or injury) are discrete quantifiable circumstances that disrupt an individual's life. Any change in an individual's life (positive or negative) requires readjustment and thus has the potential to produce stress (Holmes & Rahe, 1967). Whereas acute stress stemming from a stressful life event might be beneficial in certain situations (McEwen, 2008), strong, long-lasting, and/or repeated exposure to stress is considered toxic (McEwen, 1998, 2008; McEwen & Gianaros, 2010) and has been associated with poor mental health and developmental delays (Shonkoff et al., 2012), the development of child and adolescent psychopathology (Grant et al., 2003), the onset and exacerbation of chronic illness (i.e., diabetes, asthma; Peters & Fritz, 2010; Tran, Wiebe, Fortenberry, Butler, & Berg, 2011), and substance abuse (Anda et al., 1999; Anda et al., 2006). Accordingly, toxic levels of

stress and stress-related disorders among children and youth have become increasingly important public health issues (Shonkoff et al., 2012).

Research suggests that stressful life events in childhood and adolescence can lead to potentially permanent changes in learning (linguistic, cognitive, and social-emotional skills), behavior (adaptive versus maladaptive responses to future adversity), and physiology (a hyper-responsive or chronically activated stress response; Anda et al., 2006; Felitti et al., 1998). Further, these events can cause physiologic disruptions that result in higher levels of stress-related chronic diseases and increase the prevalence of unhealthy lifestyles that lead to widening health disparities (e.g., Anda et al., 2006; Gibb, Alloy, et al., 2001; Gibb, Wheeler, Alloy, & Abramson, 2001). The impact of trauma may depend on an individual's age at the time of exposure. For example, early exposure to adversity alters the sensitivity of stress-response systems, which in turn enhances the risk of negative outcomes,

including PTSD, following later stressors (McLaughlin, Conron, Koenen, & Gilman, 2010). These experiences could also pose a burden to various social systems—including law enforcement, child welfare, judicial and public social services, and nonprofit agencies—as these systems respond to children and families during both as they experience the event (s) and throughout their lifespan.

The Adverse Childhood Experiences (ACEs Study) is one of the largest investigations ever conducted to assess connections between toxic levels of stress caused by early adversity and later-life health. The ACE studies examined a variety of adversities experienced during childhood (e.g., physical abuse, parental divorce, substance abuse in the home), and found a strong dose-response relationship between ACEs and psychosocial and physical health outcomes in adulthood (Felitti et al., 1998; Hillis et al., 2004). Beyond the specific set of adverse events examined by the ACE study, there is also evidence to suggest that additional potentially stressful life events (e.g., homelessness, exposure to loud, long arguments, economic instability) can also impact the mental and physical health of young people. For instance, economic instability has been show to negatively affect children's social-emotional, cognitive and academic outcomes, even after controlling for parental characteristics (Brooks-Gunn & Duncan, 1997; Conger, 2005). Worsening of family financial situation has also been found to affect children. A report from First Focus (2009) shows that children age 5 to 14 who experience poverty during a recession are less likely to graduate high school and are less likely to attain postsecondary education. Children experiencing residential instability demonstrate worse academic and social outcomes than their residentially-stable peers, such as increased internalizing behaviors, increased high school drop-out rates, and lower adult educational attainment (e.g., Pettit, 2012; Rumbold et al., 2012). Finally, exposure to marital conflict has been linked to a rage of adjustment problems in children and youth, including externalizing and internalizing behaviors (see Grych & Fincham, 1990, for review). Thus, research that expands upon early adversities identified by the ACE studies by assessing for additional factors that may impact health and behavior is warranted.

More recently, research has suggested that the cumulative adversity model is likely to vary depending on sub-population categories such as gender (Schilling, Aseltine, & Gore, 2008) and that both operationalization (the number of occurrences of distinct events experienced and timing of experiences) and how the data is modeled have the potential to influence interpretation of the effect of cumulative childhood adversity on health (Schilling et al., 2008). Thus more nuanced theoretical models that take into account timing of events or specific differences by sub-population are more apt to reflect the complexity inherent in at-risk and/or maltreated children and youth (Appleyard, Egeland, vanDulmen, & Sroufe, 2005).

Because demographic factors (e.g., race, gender) correlate with several other predictors of maltreatment and outcomes for at-risk and/or maltreated youth, it is important to take the effects of these correlated predictors into account when evaluating the effects of stressful life events on adolescent health and behavior. For instance, research has found that among at-risk and/or maltreated youth that females report more trauma symptoms, while males exhibit more of some risk behaviors (Schilling et al., 2008; Southerland, Casanueva, & Ringeisen, 2009). Further, while research has shown race differences in maltreatment experience (e.g., Sedlak et al., 2010), there is little research on race or ethnicity differences in the consequences of child maltreatment, and existing findings are inconsistent. Roberts, Gilman, Breslau, and Koenen (2011) reported, for example, that posttraumatic stress disorder (PTSD) risk among those exposed to trauma was slightly higher among Blacks, lower among Asians, and about the same for Hispanics, compared to Whites. In another study, race and ethnicity did not moderate the relationship between documented cases of maltreatment and internalizing and externalizing symptoms in youth (Hatcher, Maschi, Morgen, & Toldson, 2009).

Given the high prevalence of stressful life events and their impact on outcomes, particularly among children at-risk for child welfare involvement, the immediate and long-term impacts of these events across different developmental stages need to be better understood. Examining the effects of timing of events during childhood and adolescence may provide important information about pathways between exposure to these events and a variety of outcomes for children and young adults (Appleyard et al., 2005), as well as guide intervention and prevention strategies. However, much of the research to date on the long-term effects of exposure to stressful events relies on retrospective reports about experiences before age 18. Although retrospective reports of events experienced during the formative years have led to important discoveries and breakthroughs (Shonkoff et al., 2012), it is also important to assess these relationships with prospective, proximal reports (Widom, Raphael, & DuMont, 2004).

The Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) consortium (Runyan et al., 1998) provides a unique opportunity to examine prospective reports of stressful life events across early and middle childhood, and the relationship of these events to health outcomes in late adolescence. In particular, the collection of data across childhood developmental periods provides an opportunity to identify different trajectories of youth based on exposure to stressful life events and examine whether health outcomes vary across these different exposure profiles. The purpose of the current study is to examine the relationship between patterns of stressful life events previously experienced by children at-risk and/or maltreated and the psychosocial health and risk behaviors of these youth during adolescence. Stressful life events analyzed in this study expand upon early adversities identified by the ACE studies to a larger set of stressful life events, including family transitions and residential transitions. In order to begin to extrapolate the contribution of stressful life events above and beyond maltreatment history, life events were analyzed separately, to identify groups of children with different patterns of experience of life events. In turn, the effects of membership in these classes on a variety of youth outcomes were examined. Finally, race, gender, and maltreatment status were treated as control variables in these analyses, because the LONGSCAN samples systematically varied by race, because gender is a strong predictor of several outcomes, and because maltreatment status was also a selection criterion.

2. Methods

The data presented in this paper were collected by the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), a consortium of a coordinating center and five study sites at different regions of the United States. Recruitment criteria varied from site to site (Runyan et al., 1998), but focused on children identified as at-risk for maltreatment or who had been reported to child protective services as victims of maltreatment. The sites shared age-specific data collection protocols. Target children and their caregivers were recruited into the LONGSCAN study at ages 4 or 6 and were assessed at various age-keyed follow-up points. The data reported on maltreatment were collected at ages 4, 6, 8, 12, 14, 16, and 18. The data on life events were collected at ages 6, 8, 10, 12, 14, and 16. The outcome data were collected at age 18.

2.1. Participants

The initial LONGSCAN sample included 1354 children recruited at the age of 4 or 6 years. The groups of children defined by life event membership were derived from the 1307 (96.5%) children who had available data on life events. The current analyses focus on the portion of the sample who also had data available on age 18 outcomes (N = 847, 62.5%). There were no significant demographic or baseline functioning differences between the overall LONGSCAN sample and the sample included in these analyses. The young adults in this study were fairly evenly distributed among the five study sites, as shown in Table 1.