Social Science & Medicine 156 (2016) 114–124

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Childhood adversity and adult health: Evaluating intervening mechanisms☆

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ARTICLE INFO

Article history:
Received 9 April 2015
Received in revised form
14 February 2016
Accepted 16 February 2016
Available online 26 February 2016

Keywords:
USA
Childhood adversity
Allostatic load
Self-rated health
Chronic illness
Life course
Stress
Trauma

ABSTRACT

Substantial evidence has accumulated supporting a causal link between childhood adversity and risk for poor health years and even decades later. One interpretation of this evidence is that this linkage arises largely or exclusively from a process of biological embedding that is not modifiable by subsequent social context or experience – implying childhood as perhaps the only point at which intervention efforts are likely to be effective. This paper considers the extent to which this long-term association arises from intervening differences in social context and/or environmental experiences – a finding that would suggest that post-childhood prevention efforts may also be effective. Based on the argument that the selected research definition of adult health status may have implications for the early adversity-adult health linkage, we use a representative community sample of black and white adults (N = 1252) to evaluate this relationship across three health indices: doctor diagnosed illnesses, self-rated health, and allostatic load. Results generally indicate that observed relationships between childhood adversity and dimensions of adult health status were totally or almost totally accounted for by variations in adult socioeconomic position (SEP) and adult stress exposure. One exception is the childhood SEP-allostatic load association, for which a statistically significant relationship remained in the context of adult stress and SEP. This lone finding supports a conclusion that the impact of childhood adversity is not always redeemable by subsequent experience. However, in general, analyses suggest the likely utility of interventions beyond childhood aimed at reducing exposure to social stress and improving social and economic standing. Whatever the effects on adult health that derive from biological embedding, they appear to be primarily indirect effects through adult social context and exposure.

In a relatively recent publication of immense potential significance, a highly distinguished group of researchers have argued that there is now a substantial and growing body of evidence indicating that adult health disparities have their roots in childhood adversity (Shonkoff et al., 2009). This body of research has been most effectively reviewed by Miller et al. (2011) who judge the association to be robust and likely causal in nature. Shonkoff and Bales (2011) see this evidence as strongly suggesting that reducing exposure to early life adversity may be required to effectively address adult health disparities and, thus, should be the focus of prevention and intervention efforts – a policy implication that may or may not be fully justified.

The question of the extent to which adult health disparities are largely and immutably fashioned in childhood or redeemable by subsequent social context and experience is of substantial importance because the answer is crucial for understanding the origins of adult health inequalities and for estimating the likely utility of post-childhood intervention efforts. This paper attempts to contribute toward such an answer with a recently completed population-based study that offers a unique opportunity to more fully consider this important question. Available data allows for comprehensive assessment of early and adulthood adversity, adult socioeconomic position (SEP), and multiple indicators of adult health that include both self-report and biomarker estimates. With these advantages, we consider the extent to which the effects of early adversity on adult health work primarily through subsequent stress exposures and/or social structural experience. As we will

☆ This research was supported by a grant (R01AG034067) from the Office of Behavioral and Social Science Research and the National Institute on Aging to R. Jay Turner.

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http://dx.doi.org/10.1016/j.socscimed.2016.02.026
0277-9536/

show, childhood experiences are largely, though not totally, mediated by SEP and exposure to social stress in adulthood.

1. Background

As Miller et al. (2011) have noted, almost all studies linking stress in early life to adult health have focused on either parental maltreatment or childhood socioeconomic disadvantage. That these two streams of evidence appear to converge adds confidence that there is a meaningful linkage between childhood adversity and adult health. However, the meaning of these reliable linkages remains to be established. As suggested above, one prominent hypothesis is that this association arises largely or exclusively from an embedding process of some kind, with long-term health implications that are not modifiable by subsequent social context and experience (Miller et al., 2011). If confirmed, such a conclusion would indeed suggest that early adversity has fateful health implications and that childhood may be the only point at which intervention efforts are likely to be effective in reducing adult health disparities. This version of embedding is thought to occur at the molecular level and involve enduring processes such as those described by Miller et al. (2011). A second version of this hypothesis argues that the embedding or scarring resulting from childhood adversity sets limits on the individual's capacity to develop effective coping strategies and/or to gain and maintain supportive social relationships. That early adversity can have such long-term consequences for social support has recently been demonstrated by Umberson et al. (2014).

A sharply contrasting point of view is that the early adversity-adult health relationship is best understood from a chains of risk perspective that sees early adversity as a major risk factor for future adversity, with greater accumulation resulting in elevated health risk (Blane, 1999; Kuh and Ben-Shlomo, 2004; Lynch and Smith, 2005; Pollitt et al., 2005). A crucial corollary of this perspective is that this significant over-time association arises largely from potentially modifiable intervening differences in social context and/or environmental experience and, accordingly, intervention efforts over the life course are both justified and likely to be effective. The chains of risk hypothesis differs markedly from the second embedding hypothesis in that adult variations in health-relevant contingencies are attributed to biological rather than social origins. Because the factors hypothesized to intervene between early adversity and adult health overlap across these two perspectives, present data will not allow meaningful adjudication of their relative plausibility. As such, this paper presents data that examine the relative plausibility of the first of the embedding hypotheses and the chains of risk perspective.

Although evidence of a meaningful relationship between early adversity and adult health appears solid, there are several unsettled questions that deserve additional consideration. Among these is whether measurement of health status within prior research may have yielded either an under- or overestimate of the health significance of early adversity. In a review of extant animal and human studies, Cassel (1974, 1976) argued long ago that the social environment acts to raise or lower risk for all forms of disorder and that the nature of the particular disorders that eventuate is determined on other grounds. Nevertheless, most studies on the early adversity-adult health relationship have considered specific individual disorders or narrow ranges of related disorders. Consequently, such research may involve misclassification error to the extent that 1) early adversity has effects on health problems and disorders in addition to, or other than, those captured by, or reflected within, the particular research definition employed, and 2) those classified as “well” have health problems that have not yet been labeled by a physician or have not yet been clearly experienced symptomatically.

As Aneshensel (2005; Aneshensel et al. 1991) has suggested, the misclassification of individuals with unmeasured or undetected forms of illness as not disordered is likely to have resulted in an under- or over-estimation of the health relevance of the environmental factors under study. The crucial point is that early trauma and/or significant childhood disadvantage may not be linked to a specific disorder, or set of related disorders, to the exclusion of others. Thus, research that considers the implications of alternative operational definitions of adult health status may provide a better test of the early adversity-adult health linkage (Turner, 2010, 2013).

2. Estimating adult health status

Studies conducted on representative community samples have often faced limited options for indexing variations in general health status, with many efforts relying on participant reports of perceived health or doctor-diagnosed health disorders. In addition, there is a rapidly growing literature employing biomarker data to estimate current health status, within which allostatic load (AL) has received substantial attention. To effectively evaluate the early adversity-adult health relationship, we utilize three relatively broad and often-employed indexes of physical health status, the strengths and weaknesses of which are considered below.

2.1. Self-rated health

The most popular of these operational definitions appears to be self-rated health. This popularity presumably arises from the convenience and low cost to obtain these ratings, in addition to evidence of their predictive validity with respect to mortality (Benyamini and Idler, 1999; Idler, 1993; Idler and Angel, 1990), morbidity (Farmer and Ferraro, 2005; Ferraro et al., 1997), and physical disability (Ferraro et al., 1997; Idler and Kasl, 1995). Moreover, prior studies suggest that these predictive associations do not vary appreciably across racial groups (Gibson, 1991; Johnson and Wolinsky, 1994).

Although available evidence leaves room for uncertainty, it may be that most instances of self-reported doctor-diagnosed disorders, diseases, and physical limitations tend to be reflected in reports of fair or poor health (Hardy et al., 2014). However, it may also misclassify individuals as ill who are not, thereby diluting the power of the disordered-non-disordered contrast. An additional concern is the possibility of state dependence, with individuals experiencing emotional distress at the time of the rating being more likely to rate their physical health as fair or poor.

2.2. Self-reported doctor diagnosed illness

Many studies have distinguished the ill from the well by questioning respondents on whether a doctor had told them they had life-threatening problems such as heart disease, stroke, cancer, hypertension, COPD, diabetes and/or one or more of other specific chronic diseases. Disorders reported are considered individually (e.g. Hayward et al., 2000) or as counts of reported disorders (e.g. Sternthal et al., 2011; House et al., 1994; Ross and Wu, 1995). Underlying this approach are two necessary assumptions: 1) that people can reliably report information provided by their doctor and 2) that occurrences of virtually all diseases and disorders reliably come to the attention of doctors. However, it is clear that there are racial and socioeconomic differences in the availability and/or the utilization medical care (e.g. Escarce et al., 1993; Ferguson et al., 1997; Fincher et al., 2004; Peterson et al., 1997; Klabunde et al., 1998) and in level of trust in health care institutions and physicians (e.g. Kao et al., 1998a, b; Saha et al., 2003). Consequently,