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Do hassles mediate between life events and mortality in older men? Longitudinal findings from the VA Normative Aging Study ☆

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ABSTRACT

We investigated whether hassles mediated the effect of life events on mortality in a sample of 1293 men (M_{age} = 65.58, SD = 7.01), participants in the VA Normative Aging Study. We utilized measures of stressful life events (SLE) and hassles from 1989 to 2004, and men were followed for mortality until 2010. For life events and hassles, previous research identified three and four patterns of change over time, respectively, generally indicating low, moderate, and high trajectories, with one moderate, non-linear pattern for hassles (shallow U curve). Controlling for demographics and health behaviors, we found that those with moderate SLE trajectories (38%) more likely to die than those with low SLE trajectories, HR = 1.42, 95% CI [1.16, 3.45]. Including the hassles classes showed that those with the moderate non-linear hassles trajectory were 63% more likely to die than those with low hassles trajectory, HR = 1.63, 95% CI [1.19, 2.23], while those with consistently high hassles trajectory were over 3 times more likely to die, HR = 3.30, 95% CI [1.58, 6.89]. However, the HR for moderate SLE trajectory decreased only slightly to 1.38, 95% CI [1.13, 1.68], suggesting that the two types of stress have largely independent effects on mortality. Research is needed to determine the physiological and behavioral pathways through which SLE and hassles differentially affect mortality.

1. Introduction

The adverse effects of stress on health have been accepted for the last few decades (Aldwin, 2011; Almeida et al., 2011; Cohen et al., 2007; Steptoe and Kivimäki, 2013). However, there are different ways of assessing stress, and relatively little work has been done to understand their interrelationships. In general, there are several ways of assessing stress in field settings (Aldwin, 2007). Trauma is generally reserved for events which involve serious threat or experience of death or serious injury, such as combat, natural disasters, and car accidents (Yamashita, 2011). Stressful life events (SLE) are major changes which have primarily adverse effects for individuals and their loved ones, such as deaths, divorces, or being laid off from work (Hatch and Dohrenwend, 2007; Holmes and Rahe, 1967). Hassles or daily stressors are relatively minor, everyday problems which are often linked to social roles and/or the built and natural environment, such as commuting problems, family arguments, or household repairs (DeLongis et al., 1988; Hay and Diehl, 2010). Finally, chronic role strain reflects on-going problems, generally linked to social roles, such as troubled marriages, poverty, or difficult jobs (Pearlin et al., 1996; Turner and Turner, 2005; Wheaton, 1996).

Early research sought to determine the relative strength of the association between various measures of stress and health. Lazarus and his colleagues (DeLongis et al., 1982; Kanner et al., 1981) argued that hassles were the better determinants of health outcomes, as they were more numerous and more likely to have immediate effects on health. Others argued that hassles were "contaminated" by personality factors such as neuroticism, and that life events were more objective (Dohrenwend et al., 1984; Schroeder and Costa, 1984). Aldwin et al. (1989) argued that life events and hassles were related — for example, a life event such as divorce could lead to more hassles with car repair, child care, and household maintenance. They utilized longitudinal

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data from the VA Normative Aging Study (NAS) to test the relationships among neuroticism, life events, hassles, and psychological health, and found that neuroticism was equally predictive of both life events and hassles; life events were predictive of hassles. Nonetheless, life events and hassles were both independently related to mental health, although part of the effect of life events on mental health was mediated through hassles. In this study, we examine the association between life events and hassles and test whether the effect of life events on mortality was mediated through hassles.

1.1. Life events and mortality

While life events are now widely accepted to have adverse effects on health (Almeida et al., 2011), the literature on stress and mortality is surprisingly inconsistent. Some studies have found a positive association between stressful life events and mortality (Lantz et al., 2005; Nielsen et al., 2008; Rosengren et al., 1993). Others have found no association (Maunsell et al., 2001), and still others found that stressful life events were inversely related to mortality (Hollis et al., 1990). Phillips et al. (2008) argued that the relationship between life events and mortality was confounded by the presence of health-related events in lists of stressful life events. Thus, omitting health-related items from stress measures when predicting mortality can avoid circularity.

Alternatively, it is possible that long-term patterns of stress may be a better predictor of mortality than single assessments (Kopp and Rethelyi, 2004; Pearlin et al., 1996). Aldwin et al. (2011) found four patterns of SLE change across 18 years among men in the NAS using latent class growth analysis. Three of four classes decreased over time, with the major difference among them being in the average level of stress, which were low, moderate, and high. However, one class showed increases in stress which peaked around age 70. When the stressful life events inventory was rescored deleting the two health-related items only three classes emerged (see Fig. 1a). Thus, health-related stressors may peak around age 70, although other types of stressors may decrease, probably as a function of declining social roles (Aldwin, 2011). However, we followed Phillips et al.'s (2008) suggestion that health-related stress items should not be included when predicting health outcomes. Thus, three classes, or patterns, of SLE change were then used to predict mortality. Interestingly, both the moderate and high classes had similar hazard ratios for mortality, compared to the low group, HRs = 1.41 and 1.37, respectively, suggesting that there may be a non-linear relationship between stressful life events and mortality.

1.2. Hassles and mortality

In addition to the work by Lazarus and his colleagues cited earlier, several other groups have shown that hassles have a greater impact on health than do life events (Jandorf et al., 1987; Stanley and Burrows, 2008; Weinberger et al., 1987). Several reviews have demonstrated the adverse effects of hassles and daily stressors on a variety of health outcomes (Almeida et al., 2011; Piazza et al., 2013; Zautra, 2003). However, most of the research on hassles or daily stressors utilizes proximal health outcomes such as biomarkers rather than disease onset or mortality. For example, daily stress was positively associated with inflammatory biomarkers (Gouin et al., 2012), which, in turn, were associated with the development of chronic diseases such as type 2 diabetes (Stringhini et al., 2013). However, there are very few studies of the direct effects of hassles or daily stressors on long-term health outcomes such as mortality.

In prior research with this sample, Aldwin et al. (2014) used latent class growth analysis to identify long-term patterns of hassles intensity ratings across 16 years and found four basic patterns (see Fig. 1b). Three (low, medium, and high) were basically stable over time, differing in their average level, but one large group of participants showed a shallow U-shaped curve, with hassles decreasing until about age 67 and then increasing thereafter. Jeong et al. (2012) examined the association of these patterns with mortality and found that this moderate nonlinear group had about a 30% increased risk of dying, compared to the low stable hassles intensity group.

1.3. Present study

The question remains as to whether life events and hassles are independent predictors of mortality, or whether the effect of life events is mediated through hassles. While life events are rare, hassles are ubiquitous, which may explain why the early studies cited above argued that hassles would have a more immediate and thus consequential impact on health. However, it makes sense that life events can have adverse

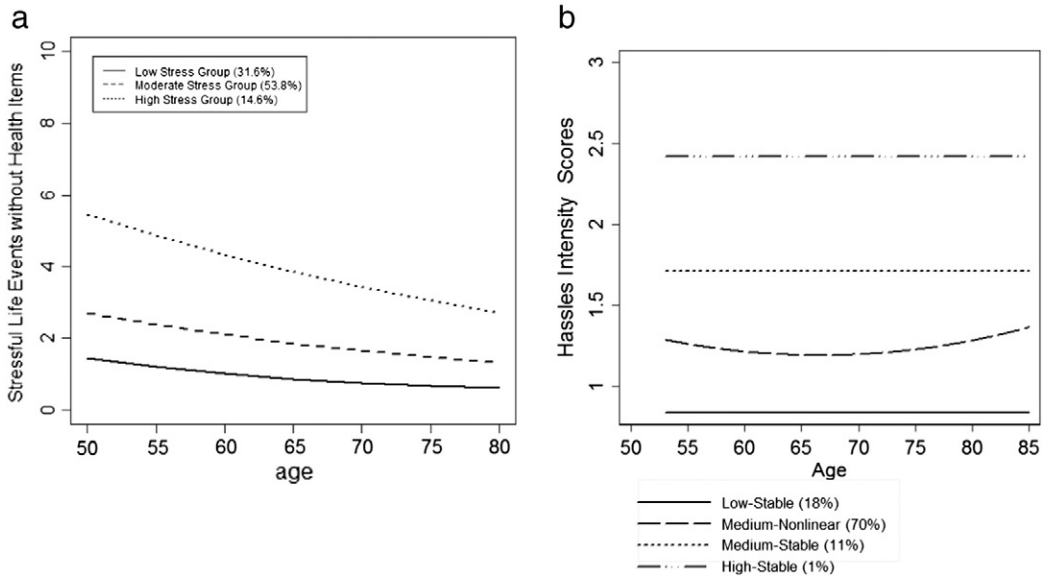

Fig. 1. Stress trajectory classes. Fig. 1a, Stressful Life Events Trajectory Categories, is from Aldwin, C.M., Molitor, N-.T., Spiro, A. III, Levenson, M.R., Molitor, J., & Igarashi, H. (2011). Do stress trajectories predict mortality in older men? Longitudinal findings from the VA Normative Aging Study. *Journal of Aging Research* http://www.hindawi.com/journals/jar/2011/896109/.