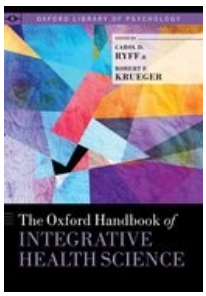

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CHAPTER

5 Gender, Early Life Adversity, and Adult Health

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Abstract

There is considerable evidence that stressful experiences in early life affect a wide array of physical health problems in adulthood. Although social demographic characteristics, such as gender, are important determinants of exposure and vulnerability to early life adversities, relatively little attention has been given to the role of gender in the associations between early adversity and adult health. This review summarizes theoretical and empirical studies that explore various gender differences in these relationships. A conceptual model is proposed outlining potential pathways that explain how and under what conditions early experiences might compromise the health of women relative to men in adulthood. Then, recent empirical work is presented to illustrate the conceptual model. Finally, ideas for future work are suggested to investigate different aspects of this model using multiple waves from the Midlife in the US study.

Keywords: gender, early life adversity, adult health, gender differences, Midlife in the US study

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Introduction

Early life adversities (ELAs), including low socioeconomic status (SES) and harsh parenting, influence a wide array of physical health problems in later life (Danese, Pariante, Caspi, Taylor, & Poulton, 2007; Shonkoff et al., 2012). Significantly, some of these adverse outcomes differ by gender, with more debilitating effects evident for women than men. Most studies, however, have used gender as a control variable, thereby undermining the possibility of exploring differential consequences of ELAs for women's versus men's health. We recognize that gender differences are challenging to investigate, in part due to underdeveloped conceptual frameworks. Thus, the first goal of this chapter is to outline the theoretical foundations of our efforts to understand gender differences. We also review empirical evidence of the gendered effects of ELAs on adult health, primarily focusing on the two most widely studied types of ELAs: socioeconomic disadvantage and maltreatment. Our review includes findings from prior studies, most of which have used data from the Midlife in the United States (MIDUS) study, as well as other nationally representative studies. Our goal is to advance prior work by proposing a conceptual model that delves into gender differences in the connections between ELAs and adult health. We then describe three studies intended to examine different parts of the conceptual model. Each example documents gender differences based on the hypotheses of differential exposure, differential vulnerability, or specific pathways. We conclude the chapter with consideration of promising conceptual and methodological approaches for future research using MIDUS data.

Theoretical Foundations

Exposure to ELAs

A *life course perspective* on health suggests that an individual's early life experiences are precursors to later health outcomes (Ferraro & Shippee, 2009; Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003). Of all
p. 64
stages in the life course, childhood is one of the most important for predicting an ↳ individual's subsequent health trajectory (Shonkoff, Boyce, & McEwen, 2009). Encountering adverse experiences in childhood is not uncommon across populations. In a sample of nearly 10,000 middle-class adults who responded to a questionnaire, Felitti et al. (1998) found that around one half of them experienced one or more types of abuse or household dysfunction as children. Similarly, a study using data from MIDUS reported that one of every two respondents experienced negative childhood events, such as physical/sexual abuse, death or illness of a loved one, or parental substance use (Friedman, Montez, Sheehan, Guenewald, & Seeman, 2015). Official documents support these findings from self-reported data, albeit with a lower prevalence. For instance, US Census data from 1959 to 2001 show that approximately one in every five children under 18 years of age lived in a family with income below the federal poverty line (Child Trends Databank, 2015), and a study using the National Child Abuse and Neglect Data System (NCANDS) estimated that one in eight US children is likely to experience abuse or neglect before age 19 (Wildeman et al., 2014).

Exposure to such stressful experiences, however, is not equally distributed in the population. According to the *social process model* (Pearlin, 1989), social demographic characteristics (e.g., gender, race/ethnicity, and SES) are important determinants of experiencing stressful events (Gustafsson, Janlert, Theorell, Westerlund, & Hammarström, 2010; Turner, Wheaton, & Lloyd, 1995). An epidemiological study of the social distribution of stress has indicated that women are more likely than men to report high exposure to some types of stressful life events and chronic stressors, including recent and chronic stress. Further, this differential exposure to cumulative stressors accounts for around one fifth of the gender gap in depressive symptoms (Turner et al., 1995). Research on gender differences in the prevalence of ELAs is limited but indicates a clear gendered pattern of exposure to certain ELAs. For example, using officially confirmed cases

of child maltreatment from 2004 to 2011, a study has estimated that the risk of exposure to abuse or neglect by age 18 is slightly (but significantly) higher for girls (13%) than boys (12.1%) (Wildeman et al., 2014). In addition to prevalence, gender determines the nature of the ELAs that individuals encounter in their lives. While findings related to physical or emotional abuse have been mixed, studies using official or self-reported data have shown that girls are at greater risk of being sexually abused than boys (Dube et al., 2005; Sedlak et al., 2010; Thompson, Kingree, & Desai, 2004).

Vulnerability to ELAs

The *critical period model* suggests that during early childhood, exposure to toxic environments, including extreme and repeated stressors, might have lifelong effects on the structure and function of physiological systems (Ben-Shlomo & Kuh, 2002; de Bellis et al., 1994; Miller, Chen, & Parker, 2011). Similar exposure to stress outside early childhood may still delay or interrupt normal development and increase the risk of disease, but the impact might be relatively weak (Ben-Shlomo & Kuh, 2002). For example, a developmental model for disease suggests that early exposure to stressors, such as malnutrition or excessive maternal stress hormones, may alter physiological regulatory systems in independent and permanent ways, thus resulting in increased risk of cardiometabolic diseases, such as coronary heart disease and diabetes (Barker, 1995, 2002; Kanaka-Gantenbein, 2010).

When investigating gender differences in vulnerability to ELAs, considering biological sex differences is a useful first step because sex shapes the risk, onset, and progression of various mental and physical health conditions. In addition, sex differences may vary across the life course depending on men's and women's susceptibility to certain conditions. For example, sex differences in affective disorders before puberty are rare, yet women, relative to men, have a greater risk of depression in adolescence and adulthood, particularly if they experienced ELAs (Bale & Epperson, 2015). Hormonal differences contribute to women having lower blood pressure and less abdominal fat than men throughout early midlife, which helps delay the onset of metabolic syndrome. The gender gap, however, narrows and even reverses after menopause (Carr, 2003; Cornier et al., 2008). Similarly, men generally have a higher prevalence of heart disease than women, yet women's risk of heart disease increases after menopause (Khalil, 2010). These examples suggest the importance of considering sex patterns in biological vulnerability to certain diseases; early life stressors may influence health over the life course in different ways for men and women.

Intervening Processes

The *life course pathway model* considers the impact of other exposures from childhood to adulthood. Early
p. 65 life circumstances may influence ↳ subsequent socioeconomic, psychological, and lifestyle trajectories, which in turn determine adult health outcomes (Dong et al., 2004; Kendall-Tackett, 2002; Power & Hertzman, 1997). In particular, the *chains-of-risk life course model* suggests that once an individual encounters an adversity, he or she has a higher chance of encountering additional adversities (Ben-Shlomo & Kuh, 2002; Rutter, 1989). Similarly, the *stress proliferation life course model* posits ripple effects from an initial stressor to additional stressors (Pearlin, 1999; Pearlin, Schieman, Fazio, & Meersman, 2005). Childhood adversities can generate stressful experiences during adolescence, which can lead to further hardships in later adulthood. For example, individuals who were maltreated as children are likely to experience poor academic and classroom performance (Zolotor et al., 1999); to engage in juvenile delinquency and adult criminal behavior and to be incarcerated (Maxfield & Widom, 1996); and to experience unemployment and economic strain in midlife (Currie & Widom, 2010). Cumulatively, these experiences could contribute to negative emotional responses (e.g., fear and anxiety) and poor health decisions and behaviors (e.g., decreased exercise, increased smoking and alcohol use, and unhealthy eating) that carry long-term consequences for health, further heightening their risk of disease (Cohen, Gianaros, & Manuck, 2016).

Using *life course pathway models*, gender differences can be investigated as resulting from distinct structural, psychological, or behavioral pathways. Women are more likely than men to experience social and economic constraints and to encounter life adversities, while simultaneously having fewer economic and psychological resources (e.g., sense of control) to cope with such challenges (Denton, Prus, & Walters, 2004; deVries & Watt, 1996; Turner & Avison, 2003). For example, women who grew up in disadvantaged families are less likely than men to have opportunities for upward mobility, particularly if they are overweight or obese (Heraclides & Brunner, 2010). Discrimination against overweight women in the labor and marriage markets plays a critical role in gender differences in social mobility (Cawley, 2004; Shinall, 2015). In addition, gender explains much of the variation in emotional responses to stress, coping strategies, and behavioral risk factors, including sleep quality, physical activity, diet, alcohol use, and smoking (Denton & Walters, 1999; Matud, 2004; Rudolph, 2002; Strine et al., 2008).

Early life adversities may be more strongly and adversely tied to adult health for women than men via *socialization*, particularly in working-class families (Lareau, 2011). Poor family environments have a strong influence on health-related lifestyles in terms of dietary and nutritional habits, physical exercise, recreation, and neighborhood and community safety (Cockerham, 2005, 2013). For example, some studies have shown that the inverse association between parental SES and children's physical activity is stronger for girls than boys (Carson, Spence, Cutumisu, & Cargill, 2010; Hardy, Reinten-Reynolds, Espinel, Zask, & Okely, 2012). Low SES families may not be able to pay for children's sports activities outside of school, and poor and insecure neighborhoods may inhibit children's physical activities (Saint Onge & Krueger, 2011). Thus, parents in low SES families may keep their children indoors, thus structuring future sedentary behaviors. Such physical inactivity leads to weight gain over time, particularly for girls (Crossman, Anne Sullivan, & Benin, 2006).

Recent Empirical Evidence

Several nationally representative studies in the United States have documented stronger adverse effects of ELAs on health for women relative to men, particularly for cardiometabolic conditions. Using the Wisconsin Longitudinal Study (WLS), researchers have shown that early life socioeconomic disadvantage (measured by a latent variable of early life SES) is associated with higher body mass index (BMI) and a greater risk of obesity in midlife, as well as steeper weight gain between midlife and later life. These relationships are significantly stronger for women than men (Pudrovska, Logan, & Richman, 2014; Pudrovska, Reither, Logan, & Sherman-Wilkins, 2014). Researchers have used the Coronary Artery Risk Development in Young Adults (CARDIA) study to show that women with poorly educated mothers have accelerated trajectories of high blood pressure from young adulthood to early midlife, even after controlling for their own education (Janicki-Deverts, Cohen, Matthews, & Jacobs, 2012). Further, using data from the US Health and Retirement Study (HRS), Hamil-Luker and O'Rand (2007) found that middle-aged women, but not men, who grew up under adverse economic conditions (defined by having mothers with low levels of education, unemployed fathers, and financial strain) are more likely to experience elevated risk of heart attack than their
p. 66 nondisadvantaged counterparts. Although these ↳ studies have illuminated the long-term effects of early life experiences, they have been limited to a single domain of ELAs (childhood SES). A major reason for this limitation may be the lack of other measures of ELAs in these national studies.

Relative to other nationally representative studies of aging, MIDUS has several advantages that are useful for illuminating the associations among gender, ELAs, and adult health. MIDUS includes an extensive set of questionnaires that assess multiple domains of childhood experiences, including early life SES, family instability, early life health, and abuse or neglect in childhood, as well as parent–child bonds. Another key strength of MIDUS is its comprehensive assessment of psychosocial, behavioral, and biological risk through follow-up interviews over 20 years, which permits insight into gender-specific pathways. Consequently, research on ELAs that uses data from MIDUS has been prolific, with nearly 70 published studies since 2002. Almost one third of these studies investigated gender differences, with mixed results; some studies found no gender differences (e.g., Andersson, 2016; Ferraro, Schafer, & Wilkinson, 2015; Greenfield, Lee, Friedman, & Springer, 2011), while others reported greater deleterious effects for men (e.g., Karlamangla et al., 2013) or for women (e.g., Chapman, Fiscella, Duberstein, Coletta, & Kawachi, 2009; Irving & Ferraro, 2006; Savla et al., 2013).

Despite these inconsistent findings, by and large, prior studies using MIDUS have shown that the adverse consequences of ELAs are more pronounced among women than men. For example, childhood abuse, in particular emotional abuse, is significantly associated with worse self-rated health (Irving & Ferraro, 2006); poor psychological well-being (Greenfield & Marks, 2009); and elevated risk of all-cause mortality (Chen, Turiano, Mroczek, & Miller, 2016) for women only. Having parents with low occupational prestige is associated with heavier weight among middle-aged women, while the effect is absent among men (Chapman et al., 2009). Women who encountered ELAs, measured by cumulative number of negative events, household dysfunction, and financial difficulties in childhood, are at risk of developing heart problems, but no such association has been found for men (Friedman et al., 2015). The number of childhood adversities, defined by child abuse and other negative events during childhood, determines perceptions of closeness with family for women only, with more adversities being associated with lower levels of attachment (Savla et al., 2013). Despite such prolific work, these studies have largely focused on testing one hypothesis: that the effects of ELAs vary by gender. In the following section, we refer to this as the *differential vulnerability hypothesis*.

Three Exemplary Studies From MIDUS

This chapter has thus far highlighted theoretical frameworks and empirical evidence suggesting that gender is a key factor in understanding associations between ELAs and adult health. Most prior studies, however, have been limited to investigating a single domain of ELAs or a single hypothesis. Based on the conceptual background described and research on gender disparities in health (Denton & Walters, 1999; Williams & Umberson, 2000), we suggest three themes regarding investigation of gender differences. First, *differential exposure* highlights that men and women may have a different likelihood of experiencing particular ELAs. Second, *differential vulnerability* suggests that the sustained effects of ELAs on adult health differ by gender. Finally, the *specific pathways* theme posits that there are gender-specific risk and resilience factors that mediate or moderate the effects of ELAs on adult health.

We also present a conceptual model (Figure 5.1) of the diverse pathways that link ELAs to adult health, shedding light on interconnections among socioeconomic, psychological, behavioral, and biological pathways in the association. The conceptual model takes into consideration the significance of gender variation in early life stress exposures, along with direct and mediating influences of various risk factors as well as moderating influences of resilience resources. Our recent studies presented in the material that follows show how the conceptual model and the three hypotheses can expand our understanding of the role of gender in this area of research.

Illustrative Study 5.1: Gender Differences in Exposure to Severe Childhood Abuse

Prior studies that have investigated gender differences in the prevalence of childhood abuse showed that women, compared to men, are at greater risk of experiencing maltreatment in childhood (Maikovich-Fong & Jaffee, 2010; Thompson et al., 2004). One limitation of these studies is in their limited conceptualization
p. 67 of childhood abuse. ↳ Individuals who encountered abuse in early life often experience various types and severities of abuse (Bernstein et al., 2003). Nonetheless, prior studies have operationalized abuse either as a discrete event (i.e., abuse did or did not occur) or with broad summary indices. Accordingly, an important task for current work is to better operationalize the measure of childhood abuse to investigate the differential exposure hypothesis.

Figure 5.1 Conceptual models linking early life adversities to chronic diseases of aging using longitudinal data from MIDUS.

Notes. For all observable pathways (the solid lines), gender differences can be tested via gender-stratified models or gender-interaction terms in the models. For unobservable pathways (the dashed lines), a MIDUS twin sample may be useful to test the association between ELAs and adult health after controlling for genetic predisposition.

Using latent class analysis, we generated five groups of individuals who have distinct profiles of type and severity of childhood abuse (Figure 5.2). Our findings show distinct gendered patterns: Compared to men, women are more likely to experience childhood abuse. In addition, women are at greater risk than men of exposure to more severe and more diverse types of abuse in early life. Using a novel approach of atypical secretion of stress hormones (e.g., ratios of stress-related hormones), we also investigated effects of ELAs on cumulative biological risk. Our findings show that exposure to childhood abuse plays a significant role in linking social status to biological risk in adulthood, explaining roughly a third of the effects of gender (women vs. men) on the dysregulation of physiological stress systems. These findings provide evidence supporting the hypothesis that differential exposure to traumatic life experiences is a key pathway that contributes to gender disparities in health (Lee, Coe, & Ryff, 2017).

Illustrative Study 5.2: Gender Differences in Effects of Childhood SES on Adult Physical Activity

Regular physical activity reduces the risk of developing the leading causes of adult mortality (Kujala, Kaprio, Sarna, & Koskenvuo, 1998). SES—not only in adulthood but also in childhood—has been shown to be an important determinant of physical activity. Children who grow up in disadvantaged environments are likely to have lower levels of physical activity and are more likely to engage in sedentary behaviors (Drenowatz et al., 2010). Some studies have indicated that an inverse association between childhood SES and children's physical activity is stronger for girls than boys (Carson et al., 2010; Hardy et al., 2012). Yet, there is limited understanding of the interconnections among gender, childhood SES, and adult physical activity.

Federal guidelines recommend that adults should engage in at least 150 minutes of moderate or vigorous physical activity each week, which is equivalent to 500 metabolic equivalents minutes per week (MMW). In addition, recent studies that use MIDUS data have indicated that such health benefits may vary by the type of physical activity (work vs. chores vs. leisure). While leisure activity was associated with decreased risk of diabetes, there was no such link for physical activity related to chores or work (Tsenkova, Lee, & Boyland, 2017). These findings suggest the importance of investigating both quantitative and typological characteristics of physical activity. ↳

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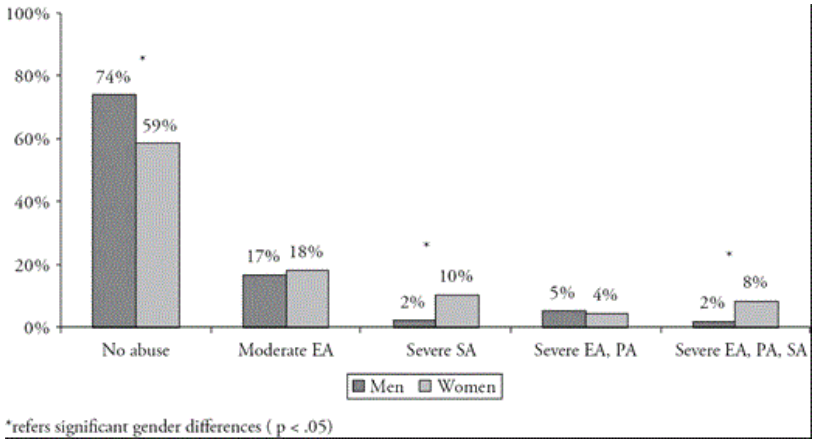

Figure 5.2 Gender differences in exposure to childhood abuse.

Notes. Compared to men, women are more likely to experience childhood abuse. Women also are at greater risk of exposure to sexual abuse as well as all types of severe abuse ($p < .05$). EA = emotional abuse; PA = physical abuse; SA = sexual abuse.

Accordingly, the goal of our study (Lee, Tsencova, Boylan, & Ryff, 2018) was to examine the differential vulnerability hypothesis: (a) What is the extent to which early life SES continues to influence physical activity in later life in terms of probability, amount, and contextual domains of regular physical activity? (b)

Are there gender differences in the associations? We used a two-part model to analyze two distinctive components of regular physical activity simultaneously in one model (probability and amount). Our findings indicate that, compared to women who were advantaged in early life, women who were disadvantaged are less likely to engage in regular exercise. Moreover, among those who participate in regular exercise, the amount of MMW is lower for women who were disadvantaged in early life. However, for men, childhood SES is significantly associated with probability, but not amount, of regular exercise. Figure 5.3 illustrates that women who had low SES in early life are less likely to meet the recommended levels of leisure-time activity (≥ 500 MMW). Overall, our findings suggest that disadvantage in early life shapes healthy lifestyles in adulthood, particularly for women.

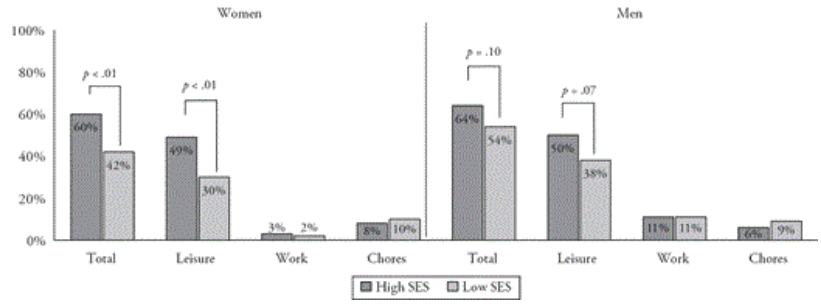

Figure 5.3 Association between childhood disadvantage and federal recommended amount of physical activity (500+ MMW) in midlife, by gender.

Notes. SES = socioeconomic status. High SES = 0 or 1 on the measure of childhood disadvantage. Low SES = 4+ on the measure of childhood disadvantage. Recommended amount of physical activity (500+ MMW) refers to a federal guideline that adults receive at least 150 minutes of moderate or vigorous physical activity each week.

Illustrative Study 5.3: Gender-Specific Pathways Linking Childhood SES to Adult Heart Disease

p. 69 Heart disease is the number one cause of mortality among US adults, accounting for one in every ↳ four deaths (Xu, Murphy, Kochanek, & Bastian, 2016). Although the influence of early life SES on adult heart problems has been well documented (Galobardes, Smith, & Lynch, 2006), few studies have investigated the life course pathways that explain how men and women from low SES backgrounds develop heart problems in later life. Early life environments affect the socioeconomic, psychological, and behavioral determinants of adult heart problems. Although these underlying factors explain a large part of the variation in the association between early life SES and adult heart problems, prior studies have indicated that the effects of childhood disadvantage remain significant, particularly for women, even after accounting for these potential mediators (Hamil-Luker & O'Rand, 2007), suggesting the need to explicate other pathways.

Responding to this lacuna, we reviewed sociodemographic patterns of fertility. That is, early life SES is significantly associated with the timing of the transition to parenthood, with individuals, particularly women, from low SES families more likely to have a child at younger ages (Pears, Pierce, Kim, Capaldi, & Owen, 2005). Low SES in childhood may thus harm the heart health of women more than men *via the timing of reproduction*. Women from disadvantaged families are more likely to bear their first child at an earlier age and sustain postpartum weight gain, which can lead to elevated risk of heart problems (Adamo, Ferraro, & Brett, 2012), thus increasing the risk for cardiovascular disease in later life (Kharazmi, Fallah, & Luoto, 2013). Our study, therefore, had two goals: (a) to investigate gender differences in the timing of the transition to parenthood as a pathway linking childhood SES to adult heart problems and (b) to examine socioeconomic, psychological, and behavioral factors (which might vary by gender) that link the timing of parenthood to adult heart problems.

The findings from our study (Lee & Ryff, 2016) show that both men and women who were disadvantaged in early life are more likely to have their first child in early young adulthood. An early transition to parenthood translates to adverse effects on college graduation, financial status, psychological well-being, smoking, and obesity for women and college graduation, smoking, and alcohol use for men. Figure 5.4 illustrates the intervening effects of life course factors in the association between childhood SES and adult heart problems. The effects of childhood SES were substantially attenuated when we added the timing of the transition to parenthood as a mediator for women, explaining 22% of the variation in the association between childhood SES and adult heart problems, but there was little change for men (see Model 2 in Figure 5.4). Our findings suggest the importance of major life transitions (i.e., parenthood) in understanding the association between childhood disadvantage and adult heart problems.

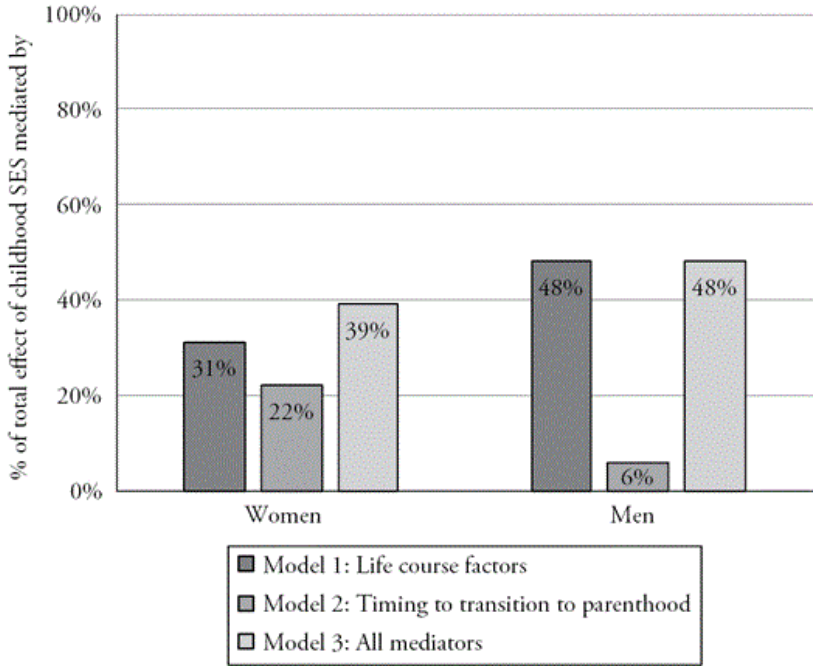

Figure 5.4 Percentage of total effect of childhood SES on adult heart problems explained by potential mediators, by gender.

Notes. The *y*-axis indicates the percentage of the total effect of childhood SES explained by each domain of mediators: Model 1 (life course economic, behavioral, and psychological factors); Model 2 (timing to transition to parenthood); and Model 3 (all mediators in Models 1 and 2).

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Future Directions

The studies presented highlight new advances in linking gender, ELAs, and adult health. Our investigations, thus far, are limited to select parts of the conceptual model, suggesting that further research is needed to illuminate the linkages illustrated in Figure 5.1. In this closing section, we underscore four important directions of future inquiry for researchers who use data from MIDUS.

Incorporating Multidimensional ELAs

Most studies have largely relied on narrow definitions of ELAs, typically using either low SES or abuse. Such measures fail to capture the wide range of adversities that individuals may encounter in early life. Future studies should advance prior work by incorporating multiple ELA domains (e.g., childhood SES, childhood abuse, parental affection, family instability, and childhood health). The depth of the MIDUS data on ELAs allows for a more nuanced and comprehensive investigation of the typology of ELAs. In addition, perhaps due to limitations of the measures of ELAs in population-based studies, most studies have focused on types or severity of ELAs (e.g., Lee et al., 2017). Future studies should consider investigating adult health outcomes from other aspects of ELAs, such as timing of exposure, the magnitude and duration of the adversity, and social context (e.g., the stigma attached to sexual abuse), as well as the interconnections between early life adversities and adversities during adulthood. Such characteristics of ELAs may differ by gender, thus contributing to gender differences in adult health.

Investigating Other Intervening Life Course Pathways

Prior work investigating life course pathway models has found that the direct effect of ELAs remains significant even after various intervening processes have been taken into account (Hamil-Luker & O'Rand, 2007; Lee, Tsenkova, & Carr, 2014; Morton, Mustillo, & Ferraro, 2014). This highlights the potential importance of intervening pathways or factors that have not yet been rigorously studied. Major life events in adulthood (described in Figure 5.1), such as graduating from college, getting married, or becoming a parent, may be important, but understudied, factors in evaluating the links between ELAs and adult health. For example, children from low-income families caught up in their parents' economic hardships may attend low-quality schools and struggle academically. They may not complete postsecondary (or even secondary) education and may have spotty employment throughout adulthood (Ratcliffe, 2015). They also have a lower probability of being married and maintaining a high-quality marriage (Hill, Young, & Nord, 1994). Such life course histories may set in motion a trajectory of poor health via negative economic, behavioral, and psychosocial pathways (e.g., low social support, financial difficulties, and less healthy lifestyles). It is thus important to uncover additional life course pathways that may explain the health impacts of ELAs. Some of the pathways might be gender specific.

Resilience and Successful Aging

There is a large and growing body of studies on resilience in the face of significant adversity or trauma (Bonanno & Diminich, 2013; Rutter, 2006). Thankfully, not all people who experience adversities progress to poor health, behavioral problems, or diseases. For example, Lee et al. (2017) found that even among survivors of severe trauma in childhood, there is wide variation in the magnitude of cumulative biological risk. This indicates that there is enormous potential to investigate various protective factors that may mitigate the adverse impacts of ELA. For example, psychological factors (e.g., optimism, purpose in life, and environmental mastery) may halt or reverse the accumulation of disadvantages beginning in childhood and may reduce the likelihood of developing negative coping strategies. Given gender differences in socialization and social roles, such resilience or protective aspects may be gender specific, although little research has systemically addressed this possibility. In addition, although the topic has been extensively studied in psychology, knowledge from other disciplines, such as sociology, may advance new lines of research on resilience. For example, individuals' network resources (i.e., social network capital) can complement and extend psychological conceptions of resilience (for the example of social capital and health, see Song, 2011). Identifying such protective factors is important for the development of intervention strategies. Longitudinal studies of aging, such as MIDUS, may reveal protective factors that help people to avoid the harmful downstream effects of ELAs.

Causal Inference

p. 71 Although experiencing ELAs is thought to adversely influence individuals' health trajectories, ↳ the causal ordering of the association is difficult to discern because the observed association may be jointly codetermined by a set of shared factors or processes. For example, some communities may have environments where children are more likely to be exposed to ELAs (e.g., neighborhood poverty), and children in these environments may be more likely to engage in health-harming lifestyles, thus resulting in poor health outcomes. Depressed parents are more likely to neglect their children, and individuals who grow up with a parent with depression may be more susceptible to mental disorders (in part because of the high heritability of depression). In these cases, the association between ELAs and adult health does not necessarily imply that the former causes the latter. Including shared factors in statistical models is important, yet shared factors are often unknown or not included in observational studies. To establish causal inferences, researchers might also consider using a nationally representative sample of twins, such as that afforded by MIDUS, to reduce the influence of unobservable characteristics in the observed associations, such as genetic makeup, family history, and shared environment (for an example using MIDUS, see Fletcher, 2012). Twin data might be particularly useful in estimating the effect of ELAs for men and women if the influence of unobservable characteristics varies by gender, such as a greater genetic contribution to obesity for women than men (Allison, Heshka, Neale, Lykken, & Heymsfield, 1994; Schousboe et al., 2003).

Conclusion

Early life adversities are significantly associated with a wide range of health conditions, including biological dysregulation in multiple body systems over the life course. Mitigating the extensive health and socioeconomic costs of ELAs requires uncovering life course processes that shape adult health and developing interventions that target vulnerable populations. Investigating the role of gender/sex is largely absent from the large body of research on ELAs. Understanding the social, economic, psychological, and biological pathways that are responsible for gender differences in the link between ELAs and adult health is a critical public health issue. Therefore, future studies should help to deepen our understanding of stress exposures and gender disparities in health, identifying possible intervention strategies for men and women that may substantially reduce the public health costs of ELAs.

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